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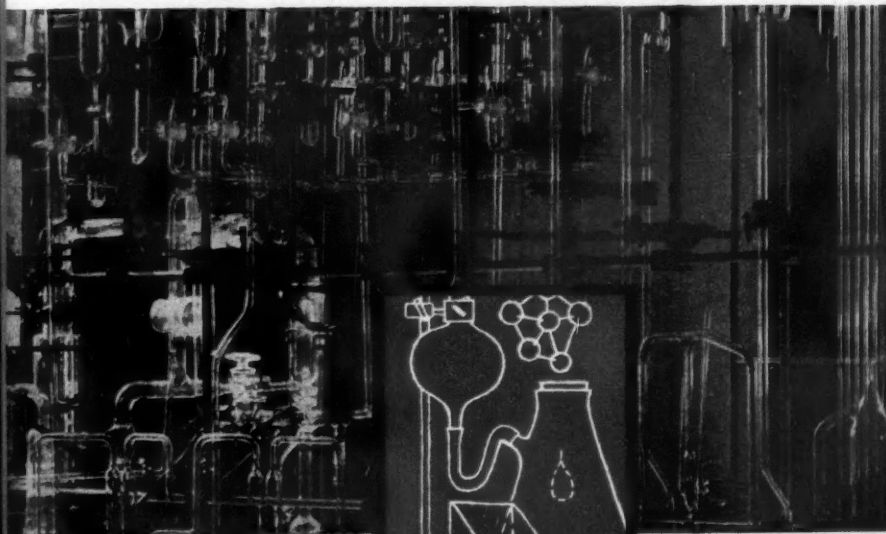
VOL. 35 No. 2172

25 February 1961

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

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Industry

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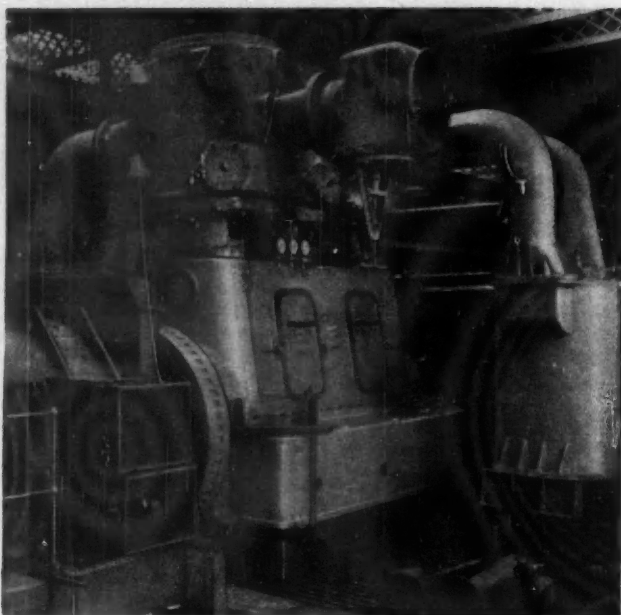
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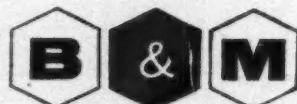
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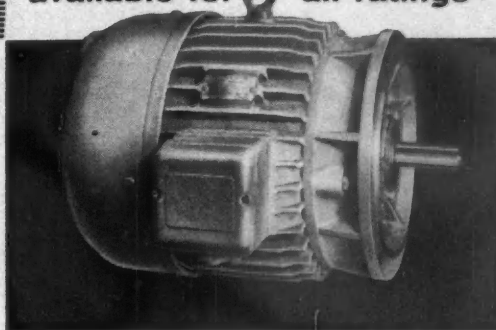
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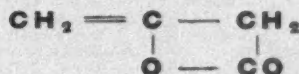
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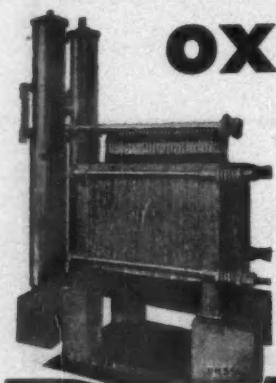
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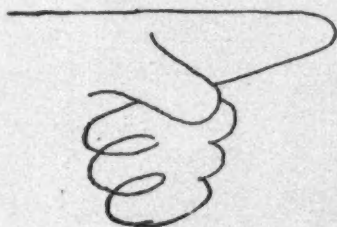
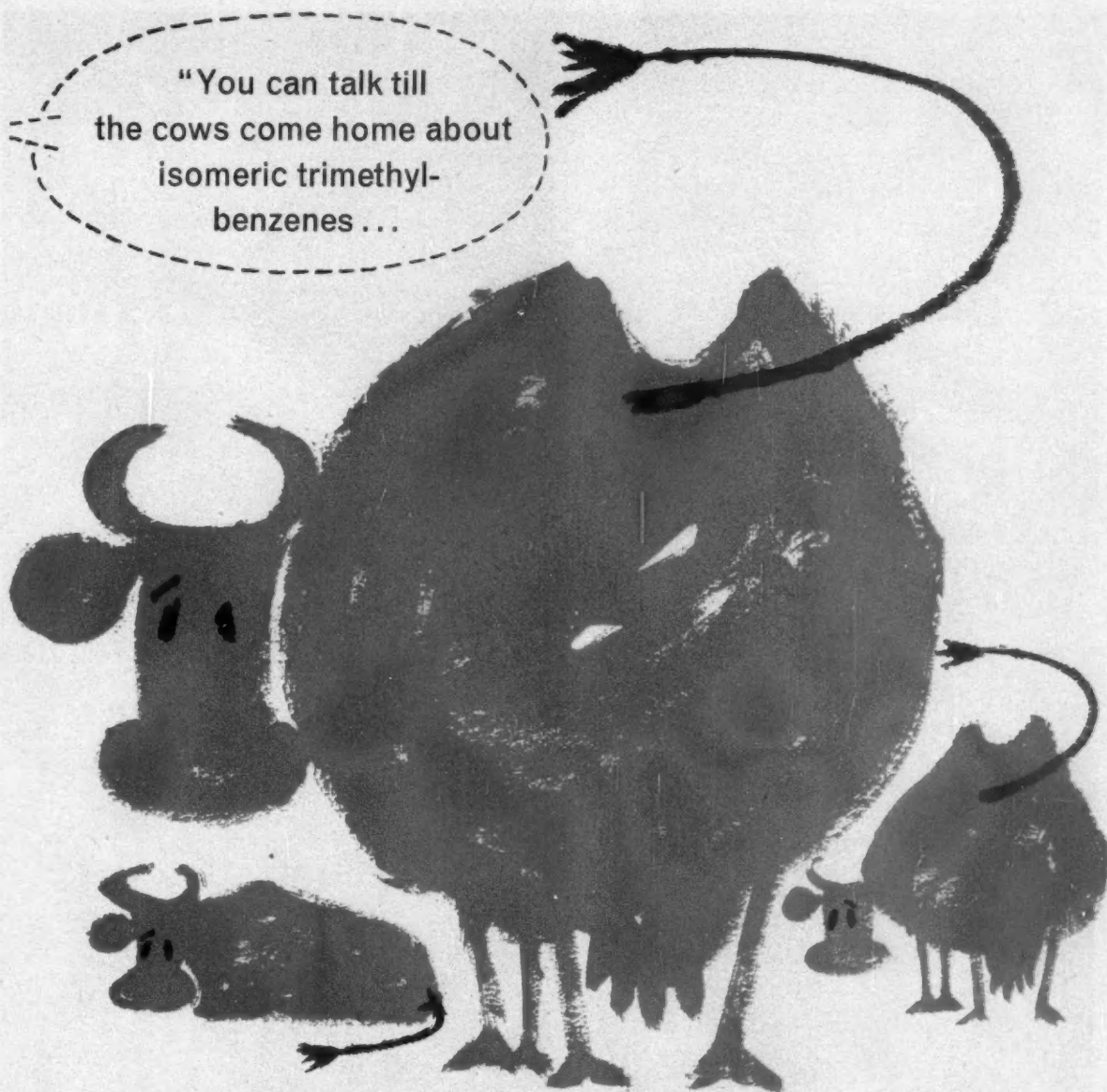
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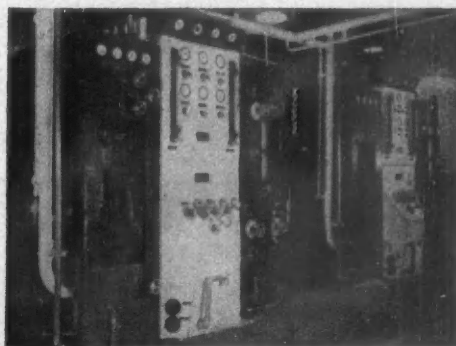
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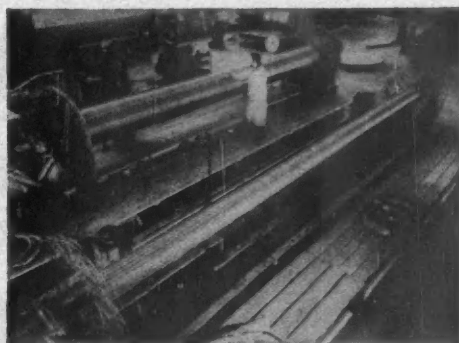
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## The British Oxygen Company Ltd

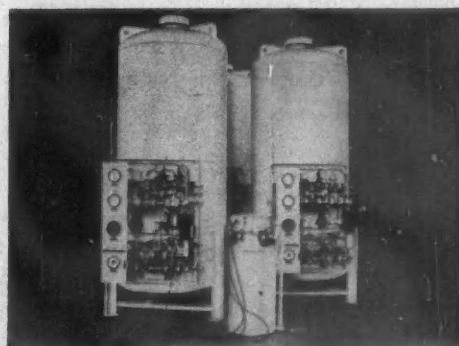
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*Liquid Oxygen Plants at the Argon Purification Plant, UKAEA, Dounreay*



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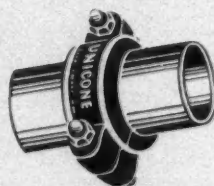
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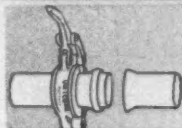


# INSTANTANEOUS JOINTS

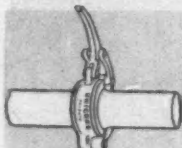
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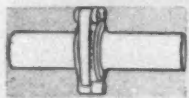
For permanent or semi-permanent pipelines 'UNICONE' bolted pipe joints are employed.



Rubber gasket in position and joint ready to pull over.



Pipe ends joined ready for locking.



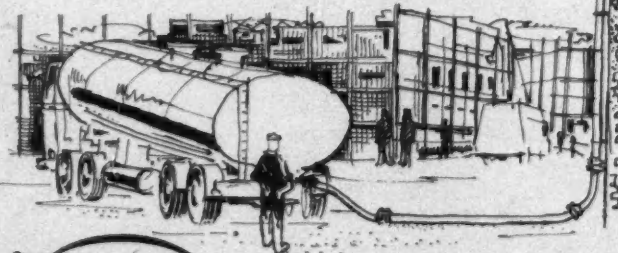
The completed joint.

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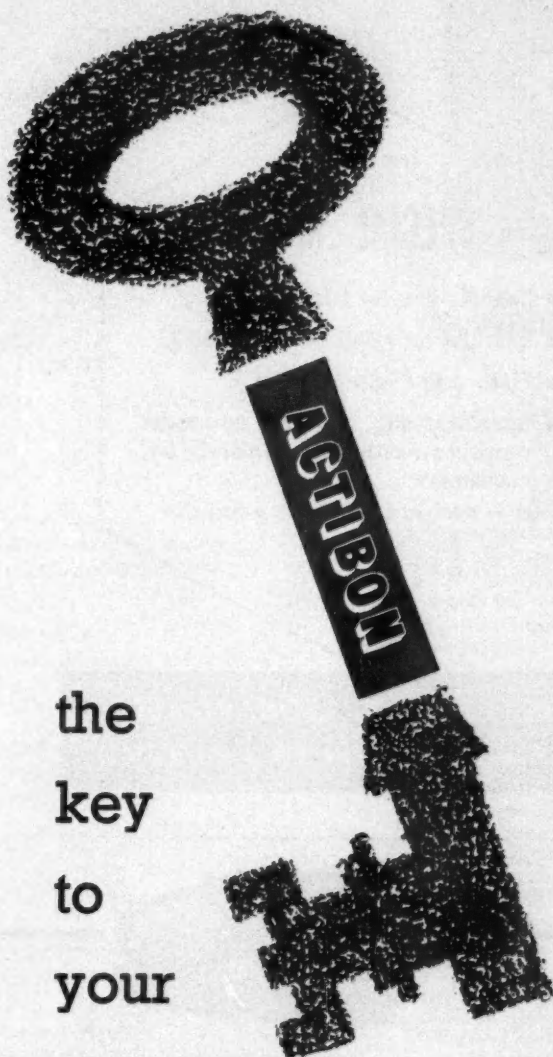
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C

# CHEMICAL AGE

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## PLASTICS IN EUROPE

THE new policy committee set up by the plastics federations of the European Free Trade Association—on the initiative of the British Plastics Federation—will not as might have initially been thought cut across the work of C.E.F.I.C. (Centre Européen des Fédérations de l'Industrie Chimique). The new committee, which is a loosely-knit organisation, intends to work in close co-operation with C.E.F.I.C. on matters concerning plastics raw materials.

There is no danger of duplicating the work of C.E.F.I.C., an organisation which covers the European Economic Community as well as E.F.T.A., because it is recognised that the chemical industry organisation has been established for some time and has been discussing plastics materials as a natural part of the chemical industry. It is intended, therefore, to work in conjunction with C.E.F.I.C.

The new committee will set up study groups to discuss such topics as rules of origin and this will be the subject of a report to the policy committee not later than its next meeting in London at the time of the International Exhibition in June. The committee will represent all sides of the plastics industry, comprising plastics materials, machinery and processing, presenting a single point of view to the Governments of the E.F.T.A. countries.

One of the most important objectives of the E.F.T.A. plastics industries will be to work towards a merger of the two European trading blocs. The E.F.T.A. market for plastics is a big one, since the population of the seven countries is about 90 million; E.E.C. population, however, totals about 170 million. Merger of the two groups would provide sales of plastics (2 million tonnes in 1959) almost as great as those of the U.S. (2.3 million tonnes in 1959) and it is worth recording that industry in Europe as a whole is growing at a higher rate than that of the U.S.

Currently about 36% of U.K. exports of plastics raw materials go to the two trade blocs; the comparable percentage for West Germany is 65. In 1959, total exports of plastics of the U.K. and E.E.C. to the U.S. were 2.5% of the total, whereas 34% of U.S. plastics exports went to the U.K. and the E.E.C. These figures clearly underline the great disparity between European and U.S. tariff rates. On one product, polythene, the U.K. import duty is 10%, in the U.S. it is 39% while the ultimate E.E.C. duty is about 20%. Even in France the current duty is only 23%. This is a matter which both the new policy committee and C.E.F.I.C. can profitably take up with Governments.

The U.K. plastics materials industry has enjoyed a big growth rate averaging 15% a year over the past 10 years; this compares with nearly 40% for petrochemicals, 11% for organic chemicals and 3% for all manufacturing industries. An even steeper rise in the growth rate can be expected over the next few years. It is estimated that U.K. production of plastics materials will total 700,000 tonnes by 1962 and will near 900,000 tonnes by 1965, following a figure of some 600,000 tonnes in 1960 and 420,000 tonnes in 1958.

The O.E.E.C. chemicals report (CHEMICAL AGE, 18 June, p. 287), showed that U.K. sales of plastics materials rose by 20% in 1959, the figure for

(Continued on page 320)



## Gas Council May Negotiate for 1,000 M. Cu.m./yr. Saharan Gas

A WAITING agreement between the French and the Gas Council is the formation of Cie Algérienne du Methane Liquide (Camel).

The Gas Council is negotiating with the French producers for Saharan gas for a supply of a large quantity, which is believed to be of the order of 1,000 million cu. m. a year—equivalent to 350 million therms (some 15% of U.K. gas sales, which in 1959 totalled 2,600 million therms).

The Gas Council's slowness to sign the contract is considered by the French as tactics to depress the contract price and not as a result of recent discoveries of large deposits of natural gas in Northern Holland which might harden the Council's negotiations.

Camel will have a capital of N.Fr.10 million (about £725,000); 50% of the shares will be held by French interests (S.N. Repal, discoverers of the Hassi R'Mel deposits, 15%, C.F.P.(A), 11%, B.R.P., 10%, Air Liquide, 7%, others, 7%) and 50% by Conch International

Methane Ltd. Shareholders in Conch are Canadian Shell Ltd., 40%, Constock International Methane Ltd., 40%, and Union Stockyard and Transit Co., Chicago, 20%. The latter two companies are participants in Constock, who own the *Methane Pioneer*, with the Gas Council and a gas liquefaction plant in the U.S.

The vast gas field of Hassi R'Mel will come into production next month. It will supply Algeria's needs, now running at 300 million cu. m./year, and expected to rise to 1,500 million cu. m. by 1965. Gas will also be exported.

Reserves are estimated at 800 million tonnes of dry gas, plus about 100 million tonnes of light products; the gas contains 83% by volume of methane and is sweet. The gas committee of the Organisation for European Economic Co-operation estimates that output of Saharan natural gas could reach 20,000 cu. m./year, of which some three-quarters could be for export to Europe (CHEMICAL AGE, 12 December, p. 949).

## Two New Groups Formed in Major A.E.A. Organisation Changes

MAJOR organisation changes in the U.K. Atomic Energy Authority involve the setting up of two new groups—for reactor design and development and for plant construction and design and inspection of nuclear fuel elements—as well as the appointment of a deputy chairman. This new post will be filled by Sir William Penney, at present member for development and engineering, who will become member for reactors.

These changes take effect from 1 April and are designed to improve co-ordination and efficiency. To enable the design and development of nuclear reactors to be concentrated in one group, the Development and Engineering Group will be renamed the Reactor Group, which will also handle relations in this field with industry at home and overseas. The new group will assume from the Research Group responsibility for the Winfrith Research Establishment.

Apart from this transfer, the structure and responsibilities of the Research Group will be unchanged. The Weapons Group will not be affected by the changes.

The Development and Engineering Group's existing responsibilities for the design and construction of plant, works and buildings will be transferred to a new Engineering Group, which will also take over from the Production Group its responsibilities for the design and inspection of fuel elements for production purposes.

In addition to the appointment of Sir William Penney, Sir Leonard Owen will now be responsible for both the Production and Engineering Groups. Also from 1 April the following appointments will take place.

Dr. F. A. Vick, O.B.E., will become director of the Research Group, while continuing as director of the Atomic Energy Research Establishment, Harwell; Mr. R. V. Moore, G.C., deputy managing director, projects, in the Development and Engineering Group, will become managing director of the Reactor Group; Mr. J. B. W. Cunningham, M.I.Mech.E., deputy managing director, technical, of the Production Group at Risley, will be managing director of the Engineering Group; Mr. J. C. C. Stewart, C.B.E., F.Inst.P., deputy managing director, operations, of the Production Group at Risley, will be managing director of the Production Group.

### Exports of Plastics

(Continued from page 319)

polythene, p.v.c., polystyrene, acrylic and other thermoplastics being 28%. U.K. sales of phenolics and cresylics in 1959 totalled 61,900 tonnes (55,400 tonnes in 1958), while sales of aminoplastics reached 55,500 in 1959 (50,700 tonnes), of p.v.c., 87,900 tonnes (70,900) and of polystyrene, 40,000 tonnes (33,700).

## Chemicals Have Highest U.K. Investment Rate

THE British chemical industry—third largest industry after engineering and electrical goods, and food, drink and tobacco—has a higher rate of gross fixed investment than any other U.K. industry, according to the Treasury. In the period 1954-58 investment in chemicals and allied industries amounted to £657 million, followed by engineering and electrical engineering goods with £643 million.

In 1958 chemical industry investment represented 18.5% of the U.K. total. In the same year employment in chemicals represented only 5.5% of the total for U.K. industry—placing chemicals sixth in the list—while chemicals represented 9% of U.K. output, third in importance.

## U.K. Cyanamid Cut Antibiotic Prices

FROM 27 February, Cyanamid of Great Britain Ltd. are cutting the price of their tetracycline antibiotics by 12%. The principal of the these are Aureomycin, Achromycin and Ledermycin. The price reductions have been made possible by the continuous expansion of production facilities; the new fermentation plant at Gosport went on stream last month.

It is estimated that these cut will result in an annual saving to the National Health Service of about £725,000. This is the fourth reduction in the prices of broad spectrum antibiotics that the company has made since 1951.

## Coalite Produce *m*-tert Butyl Phenol

THE production of a chemical new to this country, *m*-tertiary butyl phenol, is announced by Coalite and Chemical Products Ltd., Chesterfield, Derbyshire. The material is available in pilot plant quantities for evaluation both in the pure form and as a mixture of *meta* and *para* tertiary butyl phenol.

Availability of this new product should prove a useful development chemical for use in coating and adhesive resins, antioxidants, lube oil additives, anti-skinning agents, oil demulsifiers, etc.

## Joint Exams for Rubber and Plastics

FOLLOWING a plan for common examinations for those aspects of science and polymer technology that are basic to the training of both rubber and plastics technologists, the councils of the Institution of the Rubber Industry and the Plastics Institute have appointed a joint examinations board. Courses based on new agreed syllabuses, to be published later, for the associateship examination of the I.R.I. and the P.I. graduateship will come into force in September 1961 and the first final examination under the joint board will be completed in 1964.

## Project News

## Midland Tar to Raise Pyridine Capacity to 600 T.P.A.

**I**NCREASED production of pyridine planned by the **Midland Tar Distillers Ltd.**, Oldbury, Birmingham, will make M.T.D. the major world manufacturers of this chemical. Extension of existing units and construction of new plant will bring Midland Tar's capacity, now 200 tons a year, to a total in excess of 600 tons a year. The U.S. company, Reilly Tar and Chemical, have an annual capacity of about 500 tons and other tar distillers in the U.K., France and Germany produce pyridine but all with capacities under the 500 mark. U.S.S.R. are big producers of pyridine—in 1959 they exported 900 tons of the material—but this is the combined production of several plants.

Increased production capacity, which is expected on stream about March, 1962, will also yield a bigger output of other coal tar bases,  $\alpha$ -,  $\beta$ - and  $\gamma$ -picolines and lutidines. Midland Tar also produce vinyl pyridine and have made alkoxyethyl pyridine.

Pyridine is used in the production of sulphur drugs in the pharmaceutical and agricultural chemicals industries, and also as a pharmaceutical processing chemical. A growing use in the U.S. is in the production of polycarbonate resins.

Part of M.T.D.'s increased output will be exported, although they intend to satisfy the home market first. Present U.K. demand of pyridine is estimated to be of the order of 250-300 tons a year and is increasing. The Midland Tar plant will be so constructed that there will be room for extension and expansion as the demand increases.

### Leicester Lovell to Raise Resin Capacity to 27 M. Lb./year

● CAPACITY at the Southampton plant of **Leicester, Lovell and Co. Ltd.**, U.K. subsidiary of the Borden Chemical Co., U.S., is being raised by 13 million lb./year. Some 14 million lb./year of thermo-setting resins, including urea-formaldehyde, phenol-formaldehyde, epoxies and resorcinol-formaldehyde are already produced by Leicester, Lovell.

Meanwhile Borden Chemical are expanding their overseas operations with construction of a new synthetic resin plant to begin shortly near Paris for Borden Chemical Co. (France) S.A., the U.S. company's eleventh overseas subsidiary. The new plant is scheduled for completion at the end of 1961.

### Expansion for B.P.'s Joint Antwerp Refinery

● A MAJOR expansion project costing £11 million is to be carried out at the Antwerp refinery of **Soc. Industrielle Belge**

**des Petroles**, who are jointly owned by B.P. and Petrofina. The project will give the refinery a total potential capacity of around 8 million tons/year compared with the present capacity of some 4 million tons. The main new units included in the project are—a 100,000 b.p.s.d. capacity crude distillation unit with an associated gas recovery unit which will increase the potential output of liquefied petroleum gas; a 9,000 b.p.d. catalytic reformer for up-grading light distillates; a 10,000 b.p.d. hydrofiner for desulphurising gas oil; and a 60 tons/day sulphur recovery plant. In addition, capacity of the existing catalytic cracking unit is being raised from its present 12,000 b.p.s.d. to about 15,000 barrels.

The expansion project will take about two years to complete and is expected to be commissioned towards the end of 1962.

### P.G. Contract for Segas Plant in Dublin

● CONTRACT for a cyclic catalytic oil gas plant has been awarded to **Power Gas Engineering** by Alliance and Dublin Consumers' Gas Co.

The plant will consist of three units of the Segas process, producing town gas from heavy oil. The contract is to be completed by August 1962.

Other Segas units at present under construction comprise two units for Gothenburg, Sweden, and two units being built under licence arrangements for Madrid, Spain.

### Revertex Plan U.K. Synthetic Latex Plant

● ARRANGEMENTS have been made between **Revertex Ltd.**, producers and distributors of concentrated rubber latex and synthetic resin emulsions, with International Latex Corporation, Dover, Delaware, to set up a synthetic latex plant in the U.K. A jointly-owned company is to be formed to produce a wide range of latices. Negotiations are now in hand to acquire a 60-acre site near Grimsby for this development and for future expansion in other fields.

### U.S.S.R. Carbon Black Contract for Tilghman's

● IN the face of stiff West European competition, **Tilghman's of Altrincham**, one of the Stavely Coal and Iron Group, have secured a Soviet contract for the supply and installation of eight automatic bag filter plants for carbon black. Half are for a car factory being built in the Ukraine by a British consortium, the others are for a Rostov works. Tilghman

engineers will supervise assembly of the equipment, which is to be installed by January, 1962, and the first 48 hours' functioning of the plants.

The contract is worth £500,000 and was signed in Moscow on Tuesday by representatives of Tilghman's and Techmash, the Soviet trading organisation.

### R. and J. Dempster Get Stretford Process Order

● AN order has been received by **R. and J. Dempster Ltd.** for a sulphur recovery plant using the Stretford sulphur extraction process. The company is one of the recently appointed licencees for the process which was patented by North Western Gas Board and Clayton Aniline Co. The plant, which will process approximately 11 m. cu. ft. of refinery gas per day, will be delivered and erected at Antwerp, and is the first operating on this process to be ordered.

The Stretford process was described in *CHEMICAL AGE*, 22 October, 1960, p. 664 and 7 January, 1961, p. 17.

### Kellogg to Build Stanvac Adelaide Refinery

● CONTRACT for the £A16 million refinery that **Standard Vacuum Oil** are to build near Adelaide has been awarded to **M. W. Kellogg**, U.S. Construction will start about the middle of 1961 and crude throughput will be nearly 38,000 barrels per day.

### South African Titanium Oxide Plant Makes Progress

● VALUE of the output of titanium oxide from the plant being built at Umbogintwini, just south of Durban, South Africa, should ultimately be in the neighbourhood of £2-£3 million a year, according to Dr. A. L. Roberts, general manager of **South African Titan Products**, for whom the plant is being built. Production is expected to start at the beginning of next year. Major raw materials to be used in the £3 million plant are ilmenite, which will probably be obtained from nearby Umgababa, and sulphuric acid, produced by African Explosives and Chemical Industries Ltd. in a plant adjoining the TiO<sub>2</sub> factory. African Explosives are joint owners of the new enterprise with British Titan Products Co. Ltd.

As reported in *CHEMICAL AGE*, 23 July 1960, p. 129, main contractors for the new plant are **W. J. Fraser and Co. Ltd.**, Romford, Essex.

### Development Block Contract Awarded by I.C.I. Hyde

● A CONTRACT worth £12,275 for the construction of reinforced concrete frames for a new design and development building for **I.C.I. (Hyde) Ltd.**, Ches., has been awarded to **J. Gerrard and Sons Ltd.**, builders and civil engineering contractors of Swinton, Lancs. Main contractors are Thomas C.

(Continued on page 325)





★ Two new developments in the shipping world make chemical news this week—one the shipment of molten phenol from Grangemouth to Israel and the second the building of a 33,000-ton tanker to take liquid liquefied natural gas from Kuwait to Japan.

A German 1,200-ton tanker is taking phenol from Grangemouth to Haifa for the production of synthetic resins. Phenol, produced by British Hydrocarbon Chemicals for the D.C.L. Chemicals Division, is loaded while molten and maintained in this state until it reaches its destination when it is pumped into heated containers.

In Japan, Bridgestone Liquefied Petroleum Gas Co., a new company, have ordered a tanker to carry between 13,000 and 15,000 tonnes of refrigerated gas. Claimed to be the largest of its kind in the world, the vessel will cost some \$1.5 million and will be delivered at the end of this year.

★ In these days when the 'new leviathans' seem to be monopolising the news with mergers and vast new construction projects I am delighted to learn that for once they have been elbowed out of the headlines by a relatively small company. Next year, Midland Tar Distillers will become the major world producers of a vital chemical raw material—pyridine; their production is already the largest of the five main U.K. producers.

Midland Tar tell me that this extension of their traditional activities will doubtless lead to increased export earnings for the U.K. Not only will part of their increased production be exported, but the pharmaceutical and agricultural chemical producers, who are the company's main customers, will also be able to export even larger quantities of the more complex compounds made from pyridine.

★ CONTROVERSY seems to surround the scientific journals. The Whitehall proposal to tidy up rating legislation by making learned societies liable to pay rates, is followed by an attack on publications by no less a person than a deputy secretary of the Department of Scientific and Industrial Research. (It now seems that the Government may be having second thoughts about their rating proposals, which would have forced some societies to cut down on their publications.)

Dr. B. K. Blount, writing in the *New Scientist*, makes a good point when he says that scientific documentation is getting out of hand, but he is not likely to

find widespread support when he calls in question the continued publication of standard scientific journals. Dr. Blount has a direct author-to-user plan to ease the task of research workers in their literature searches—research papers should be produced nationally and sent to an international organisation; this would then publish an index of titles or an abstract journal on which researchers would depend for knowledge of papers of interest. They would obtain copies direct from the authors; review articles would provide knowledge of progress outside a particular field.

This direct author-to-user transmission of information is all very fine in theory. In practice it could be like the retailer trying to do without the wholesaler—instead of sending his articles to one or two sources for wider circulation, the author would be dealing with thousands of readers.

★ BAYER PRODUCTS are up in arms, and with good reason it would seem. A product of Bayer's has been criticised in the House of Lords in terms which, although the drug was not mentioned by name, left no doubt that the reference was to Virugon. Lord Taylor stated that the drug "claims to be the first antibiotic to act against the viruses". Bayer deny that they have ever made claims to the effect that Virugon is an antibiotic and maintain that it is correctly described by them as the *first oral antiviral synthetic* capable of use in man.

Lord Taylor implied that the research had not been properly carried out, and that clinical trials shown in a film were inadequately conducted. Bayer say that the research involved a 10-year study and over 10,000 patients. Lord Taylor, obviously disturbed by the what he considers to be the inadequate testing of new drugs, chose an unfortunate example in Virugon for Bayer are prepared to stand by the statement given at the end of the film seen by Lord Taylor:

"Virugon stands just within the frontier of the still largely unexplored country of virus research. . . . In Virugon, the physician now has available a valuable agent in the struggle against influenza and other virus diseases."

★ MANY readers will doubtless have read with much interest the recent sale by I.C.I. of a licence on Perspex (polymethyl methacrylate) and know-how to American Cyanamid (C.A.), 14 January, p. 98). The sale has been completed for what I understand to be "a considerable sum", despite the fact that

I.C.I. patents on this material have expired.

Sale of know-how might suggest that I.C.I. were not so interested in this material, but the company has announced a £1 million expansion of Perspex capacity to 20,000 tons a year, from the present 17,000 tons; further expansion is planned.

Some 45% of I.C.I.'s Perspex production is exported. At the time of the patent sale agreement, it was indicated that American Cyanamid wished to add methacrylate to their range to take up excess hydrocyanic acid capacity.

★ ONE of those bold, attractive advertisements in the 'Situations Vacant' pages of my newspaper was for a 'potato crisp chemist' and my first facetious thought was that, one day, we might hear of an Emeritus Professor of Potato Crisp Chemistry at the University of Spudfry. But, to strike a more serious note, the advertisement illustrates the very wide scope for the chemist in industry today; some interesting chemical research, including investigations into certain aspects of potato growing, lie behind the production of potato crisps with just the right amount of crackle and crunchiness.

The advertisers were Meredith and Drew Ltd., whose Ashby-de-la-Zouch crisp factory, like any other, involves production problems which chemistry can help to solve. One major problem encountered recently was that of foaming, which made itself a nuisance at a number of stages in the process. At the end of a day's work, some 100 lb. of starch deposited by the foam had to be cleaned off the machinery. The problem was eventually overcome by the use of a silicone antifoam emulsion supplied by Midland Silicones Ltd.

★ AN all-time record steel production in 1960 will help boost basic slag supplies. Although the exceptionally wet winter has made it impossible for many farmers to apply basic slag, they have been getting the chance of redeeming the situation in recent weeks.

Steelmakers' plans for expansion during the next five years will boost the supply of basic slag, consumption of which in the fertiliser year that ended on 31 June last was a record. By 1965 supplies of basic slag should exceed 1 million tons a year. If grassland farming continues at an intensive level—as it has since the war—then more than 1.25 million tons could profitably be used each year to give Britain's 18 million acres of grassland its much needed phosphate.

*Alembic*



# CHEMICAL INDUSTRY IN POLAND

## Trade Delegation Looks for 40% Rise in Chemical Imports from U.K.

It is hoped that a trade agreement on a long term basis will be the eventual outcome of discussions which have taken place in London this week between a delegation from Ciech, importers and exporters of chemicals for Poland, and a number of U.K. chemical companies, with regard to the export of chemicals to Poland. The companies concerned are I.C.I., Shell, British Geon, British Resin Products, Distillers, Monsanto and British Titan Products.

Apparently the prices originally quoted were unattractive but discussions have left the Polish delegation "quite satisfied." They have met with understanding and good will and many difficulties have been smoothed out, although there are still one or two points which need clearing up.

An increase of about 40% over the 1960 figure in U.K. exports to Poland is expected in 1961 as a result of the discussions. Exports in 1960 were approximately £1.5 million; the 1961

total can therefore be expected to be around the £2.1 million mark. The chemicals which will feature in these exports come into the inorganic, organic, plastics, plant protection chemicals and dyestuffs groups.

Poland has had business dealings with the U.K. for some time, including exports from Poland to the U.K. After their recent visit to the U.K. the delegation feel that they now know more about the possibilities of trade in that direction, although their main concern on this particular visit has been imports.

The delegation which consisted of Mr. Poniatowski, general director of Ciech, and Mr. Modzelewski, director of plastics, finished their discussions on Tuesday and returned to Warsaw on Wednesday this week.

These discussions have consolidated the delegation's view of the British chemical industry which was already high, although they think that, in some instances, the industry could be a little more flexible.

synthesis produce about 60 tonnes/day; the new ones, designed in collaboration with Czech specialists, will provide 190 tonnes/day. This equipment will be imported partly from Czechoslovakia and partly from Western countries. Ammonia and waste carbon dioxide will serve for the production of high-grade urea.

The second product of the partial combustion of methane, acetylene, will be used for the production of p.v.c. by the suspension method, not previously used in Poland. The processing installation for this purpose, which will initially yield 40,000 tonnes/year and later twice as much, is to be built on the basis of a joint project with East Germany, which is providing most of the equipment.

### Chlorine Production

Chlorine will be produced by electrolysis of brine in baths at 50,000 amp (the present ones use a current of 18,000 amp), also on the basis of joint plans with East Germany and equipment supplied from that country.

Acetylene will also be used in the manufacture of acrylonitrile and for synthetics and synthetic rubber. This production will take place in a fully automatic factory imported from Western countries.

A polyester fibre under the name of Elana, based on a licence for Terylene purchased from the U.K., will be produced. The semi-product for this fibre will be produced at Blachownia. The total value of the output of these polyester fibres by 1965 will amount to \$50 million.

The Wrocław works will develop the production of viscose silk based on spinning machinery from East Germany, and a new factory will use machinery for viscose rayon production purchased from Czechoslovakia. Polythene will be produced by the high pressure method (1,500 atm.) in a factory for which licence, plans and equipment will be purchased from Western countries. The raw material for the production of ethylene will be partly provided by coke-oven gas, the main source, however, will be the pyrolysis of benzene, using an installation designed and supplied from Czechoslovakia.

The chemical industry's largest project during the period, the Mazovian Refinery and Petrochemical Works at Plock, built in connection with the oil pipeline linking the U.S.S.R. with Poland, Czechoslovakia and East Germany, will be based largely on Russian documentation. Part of the cracking installations will come from the U.S.S.R. and Rumania, and the plant for the desulphurisation of gaseous oil, together with a fully automatic installation for xylene production, will be bought from Western countries. The thermo-electric power station for the plant will be provided by Czechoslovakia.

In 1965 a new nitrogen fertiliser works, based on natural gas from the U.S.S.R., will be opened. It will consist of units

## Imports Aid Development of Poland's Industry

At present the chemical industry in Poland provides about 6% of the total value of the country's industrial production, according to *Przegląd Techniczny*, 52, 1960. So far the main development has been in the direction of creating a new basis in fundamental products such as fertilisers, soda, chlorine, sulphuric acid, etc. At the same time, there have been advances in organic synthesis and the production of dyes and synthetics, including plastics-coated steel, p.v.c., polystyrene and synthetic rubber.

In the course of the current five-year plan period which has just been started, there will be a certain change in emphasis. By 1965 the industry's output will be twice that of 1960, but the development over that period will more than ever before be based on completely new technologies which have in many cases not yet been introduced in Poland or associated countries. As yet, Poland does not manufacture various kinds of machinery for the chemical industry, for example, turbo-compressors, gas compressors, large refrigerating plant, automatic centrifuges, acid-resistant pumps, tyre-making machinery, machinery for processing synthetics, silica rectifiers, high-power transformers, etc.

Only a small range of control and measuring apparatus is made, and there is a lack of high-pressure apparatus (even up to 300 atm.), large plated acid-resistant autoclaves, high alloy argon-

arc welded acid-resistant steel apparatus, apparatus for the low-temperature separation of gases, etc. Thus there is a need for the large-scale import of licences and documentation, as well as complete installations, from both eastern and western countries.

The nitrogen fertiliser industry will base its development on natural gas and coke-oven gas, not as previously on coke, thus creating a new basis for other syntheses. To this end the Kedzierzyn Nitrogen works has bought from France a complete plant for the low-temperature separation of coke-oven gas, which will give hydrogen and nitrogen for synthesis of ammonia, gas for synthesis of methanol, and ethylene for the production of polythene. This plant will use the first rapid 'boxed' centrifuges to be employed in Poland. High purity gases will be produced, harmful impurities being reduced to a few p.p.m.

A new ammonia synthesis section at Tarnów, much larger than the existing one, will be based on the semi-combustion of natural gas with oxygen, with the simultaneous production of acetylene. A licence and plan for it have been purchased in Italy; these envisage the use of large modern units, incorporating oxygen apparatus with a productive capacity of up to 10,000 m<sup>3</sup>/h and a large-scale scrubbing plant using liquid nitrogen to wash synthesis gas. The units at present employed for ammonia

producing 270 tonnes/day of  $NH_3$ , and the technology of conversion of natural gas will be based on a West European licence, with most of the installations coming from Czechoslovakia.

Large-scale production of liquid oxygen will shortly begin, using installations from East and West Germany, which will also yield argon for argon arc welding.

The import of complete plants and

single installations for the chemical industry over the 1961-5 period will account for over half the total value of new plant and installations in this field. Between 1961 and 1964 the chemical industry will continue to be based on imports, but in succeeding years the industry's needs will in a large measure be covered from domestic production of Poland's installations.

## Advantages of High-density Polythene for Fishing Nets Shown in B.R.P. Film

THE use of high-density polythene as a material for fishing nets and lines is a new development which is described in a film produced by British Resin Products Ltd. given its first showing on 15 February.

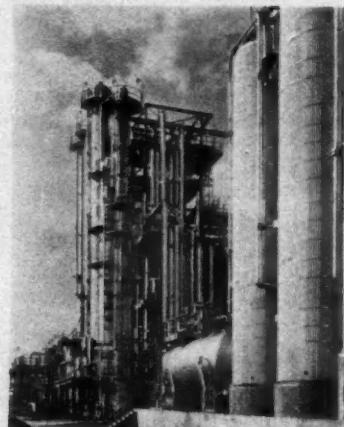
The purpose of the film is to underline the advantages of using fishing nets and lines correctly made from a suitable plastics material, and to illustrate the way in which new uses for plastics continue to be found. Fishing nets and lines made from high-density polythene filament have all the advantages of the material—resistance to corrosion, ability to float, and lightness and toughness, particularly when wet.

The film shows the production of the Rigidex polyethylene at British Hydrocarbon Chemical's plant at Grangemouth, extrusion of the material into monofilament, spinning into twine and weaving into nets.

Running for 21 minutes, the film is aimed at five broad types of audience: the users of fishing nets and lines; manufacturers of nets and lines; plastics processors generally; technical colleges, science students, etc.; and general audiences abroad with the object of enhancing national prestige.

The film is being distributed through several agencies as well as by British

Resin Products themselves. Phillips (U.S.), the company's U.S. associates, intend to use the film for promotional purposes in the U.S. and it is being considered by Distillers for showing at the British Trade Fair in Moscow. Four copies have also been supplied to Courtaulds.



Manufacture of Rigidex polyethylene at Grangemouth, showing ethylene storage vessels, with fractionating section behind

## Petrofina Describe Determination of TEL and TML in Petrol

THE use of tetramethyl lead as an anti-knock additive in petrol is presenting a new problem to the petroleum laboratories. The standard A.S.T.M. method D 526-56 cannot be used for the analysis of petrols containing a mixture of tetramethyl lead and tetraethyl lead or for the determination of lead in a sample containing alkylated lead additives.

A simple method, however, has been worked out by members of the Research Centre of the Petrofina Group (*Nature*, 11 February 1961). The method uses petrol fractions obtained by distillation. Generally, four fractions and the residue were examined: initial boiling point to 100°C; 100° to 125°C (fraction containing the tetramethyl lead); 125° to 150°C; 150° to 175°C; and the residue (containing the tetraethyl lead). About 250 c.c. of the

petrol are distilled on a Vigreux column (30 cm. in length), in 2 hours.

The different fractions were examined by means of a Zeiss flame spectrophotometer at 406 mμ in order to determine the lead. It was found that the slower the distillation, the better the separation of the lead in the spectrophotometric determinations.

The method was checked using a platformate containing tetramethyl lead, tetraethyl lead, and a mixture of tetramethyl and tetraethyl lead. Since the results of lead distribution in known mixtures was reasonable, commercial samples were examined. The results tallied with those advertised by the petroleum companies.

Anti-knock quantitative analysis may be carried out in the usual way.

## Cape Asbestos to Produce in Mexico

A FINANCIAL interest in Aislantes Industriales, S.A. de C.V. of Mexico City, manufacturers of foamed polystyrene insulation products and asbestos Aircell pipe covering for low temperature work, has been acquired by the Cape Asbestos Co. Ltd. Early in 1961, Aislantes Industriales will begin manufacture of Caposite, amosite pipe sections for high temperature insulation. A large portion of the Mexican firm's business is with Pemex.

A new factory is being built in Santa Clara, 15 miles north of Mexico City. Specialised equipment will be supplied by Caposite Insulations Ltd., a Cape Asbestos associate in Canada. Production of Caposite insulation in Mexico is expected to start early in 1961. Mexico will be the twelfth country in the world in which materials made from Amosite asbestos produced in Cape Asbestos mines in South Africa are manufactured locally.

## Dyestuffs Exhibition Attracts U.S. Interest

U.S. COMPANIES are stated to be showing much interest in the first international exhibition of textile dyestuffs, finishes and auxiliaries that will be held at Exhibition Hall, Harrogate, from 12 to 15 September 1961. Exhibitors will include several companies who have "never exhibited anywhere before".

Of the 4,421 sq. ft. of the available space, nearly 1,700 sq. ft. have been allocated. More than 50,000 tickets will be distributed.

## Albright Raise Dividend for 1960

A SECOND interim dividend of 14%, to be final, was declared on Wednesday by Albright and Wilson Ltd. This makes a 1960 total payment on ordinary of 20% (equivalent to 18 $\frac{1}{10}$ %). In the unaudited consolidated profit and loss accounts for the year ended 31 December the results include figures for the whole of 1960 for A. Boake Roberts (acquired by A. and W. in February last). For comparison, the second column shows 1959 A. and W. results as previously announced and the third column the 1959 results adjusted to include Boake Roberts' profit in 1959:

	1960 '000	1959 '000	1959* '000
Trading profit, before depreciation	7,863	7,390	7,987
Depreciation	2,347	2,283	2,458
Trading profit	5,516	5,107	5,529
Tax	2,391	2,225	2,401
Group net profit	2,654	2,433	2,624
Profit attributable to subsidiaries	172	147	156
Preacquisition profits of Abrac	47	—	—
Profit attributable to A. and W.	2,435	2,286	—

\* Adjusted to include A. Boake Roberts.

As forecast in the half-yearly statement issued in August 1960, operations of overseas subsidiaries have been disappointing. The U.K. companies have continued to make progress.



### B.A.C. Lecture on Nuclear Energy

AN open lecture on the 'Social and economic aspect of nuclear energy' was held by the British Association of Chemists at Liverpool on 21 February. The lecture was delivered by Dr. I. G. Campbell, Senior Lecturer in Radiochemistry at the University of Manchester. He spoke of the growing competition of nuclear energy against coal-fired generating stations as a source of power, and of the lack of atmospheric pollution by smoke of a nuclear station.

The socially valuable aspect of atomic energy development in a number of branches of science, such as the chemistry and analysis of minute amounts of substances, the purification of materials to very high limits, the interaction of radiation with matter and ecological and environmental medicine and radioabiology, were all covered.

Finally, Dr. Campbell dealt with the impact of nuclear weapons on the policies of nations.

### Chemical Booby Traps on Film

AMONG new films added to the Central Film Library, Government Building, Bromyard Avenue, Acton, London W.3, and available on hire is 'Chemical Booby-traps'. Produced by the General Electric Co., U.S., this one-reel colour film lasts 11 minutes. It deals with the risks involved in the storage and handling of inflammable or explosive substances.

Also newly available is a three-reel colour film, made for the U.S. Atomic Energy Commission, which lasts for 25 minutes and deals with the production of uranium feed materials. Shown are the chemical and metallurgical reduction of uranium concentrates and the forging, rolling, extrusion and finishing processes.

### Project News

(Continued from page 321)

Stuart (Contractors) Ltd., Bury St. Edmunds, Suffolk.

This will be a two-storey building, 135 ft. by 35 ft. by 22 ft. 6 in. high, comprising concrete *in situ* columns and beams with precast concrete floor, roof units and overhanging eaves beam. The project also includes a workshop block, which will have two bays incorporating barrel vault roof design. The building is due for completion on 30 April, 1961.

### Libya Extends Boby Contract

● CONTRACT held by William Boby and Co., Ltd., for a water and power supply plant at Zliten, has been extended. The Libyan Public Development and Stabilisation Agency accepted a tender of about £45,000 for the second phase of the work. An electrodialytic desalting plant which purifies brackish desert well water was installed by Boby's at Tobruk two years ago and is now in full production.

## Laporte to Raise Capital to £18.5 m. to Cover Continuing Expansion and Bid for Howards

TO cover the cost of the acquisition of Howards and Sons Ltd., Laporte Industries Ltd. propose to raise their capital to £16,041,250 by the creation of 472,500 additional 5½% cumulative second preference of £1 each and 2,137,500 ordinary of 10s. each. In addition it is proposed to raise the L.I.L. capital further to £18,500,000 by the creation of 4,917,500 10s. ordinary. This will help create a reserve of unissued share capital which is thought advisable in view of the group's continuing expansion.

Laporte forecast a final dividend of not less than 7% for the year to 31 March on the increased capital; a 3% interim has already been paid.

For the first eight months of the year ending 31 March next, L.I.L. Group earnings (excluding those of Peter Spence) showed a modest increase over the previous year; however, during December and January there was a fall in group earnings. It is stated that earnings during February and March should return to the same rate as that for the first eight months. The group's income before tax, which will include a contribution from Spence for the first time is unlikely to differ substantially from that of last year when a record figure was achieved.

In a letter to shareholders, Mr. P. D. O'Brien, chairman, says that the merger is recommended as a means of accelerating development into the organic side of the chemical industry, which is cur-

rently providing some of the most rapid industrial advances.

Mr. T. W. Howard, chairman of Howards and Sons Ltd., says the directors are satisfied that the future prospects of the business—founded by Luke Howard, F.R.S., in 1797—will be more assured in combination with Laporte than if it continued as a separate undertaking. Organic technical chemicals now form a major part of the business and developments in this field now in hand will involve spending more than £1,100,000 during the next 15 months and would have meant the raising of extra capital later this year.

Other developments are planned in the U.K. and in Canada, the rate of development being limited by the capital available. Mr. Howard had no doubt that the greater capital resources of a larger group would enable the business to develop faster than it could have done as an independent company.

If the offer becomes unconditional, Mr. Cecil M. Rait, a non-executive director of Howards in a financial advisory capacity for four years would resign; additional directors, nominated by L.I.L., will be named in due course.

Mr. Howard added that L.I.L. had stated they did not anticipate wanting to make any substantial changes in the foreseeable future in the management, staff and employees of the Howards group and that there was no intention of discontinuing the use of the name Howards in the operating company.

## Gas Board's Work Study Plan Raised Tar Plant Productivity

WORK study and planned maintenance at the Ordnance Wharf tar plant of the South Eastern Gas Board, East Greenwich, have made possible big savings. On No. 1 still the man-hours saved have totalled 1,291 (a 20% saving), on No. 11 still, 1,664 man-hours (or 36%) and on No. 12 still, 3,793 man-hours (or 33%). These are recurring overhauls and the savings will be repeated.

Method studies were made during the major overhaul of two continuous tar stills, when it was found that the painters could work to the time standards set. The next big step was to study a major overhaul of a continuous still, a task requiring 3,500 man-hours. This involved work measurement of general labour and tradesmen and the payment of an incentive bonus.

As a result craft labour was cut from 69 men to 55 men and overtime from 500 hours to 100 hours a week. There has been the reduced labour force. The saving also been an increase in the work done

in plant maintenance is conservatively estimated at 30%, in addition to which, because of time savings, £12,000 of capital work was done by direct labour instead of by contract.

The general satisfaction among the men at the rewards gained from measured work bonuses during overhauls led to their request for the extension of the system to their normal day-to-day work.

### 7-Storey Chemistry Block for Glasgow College

A £1.25 million building programme for the Royal College of Science and Technology, Glasgow, includes a new seven-storey chemistry block, fronting Cathedral Street, and a three-storey chemical technology block fronting John Street. The first two floors of the chemistry block will be devoted to chemical technology and the remaining five floors to chemistry.



## Vacuum-filled Polythene Bags are Cheaper and Stackable

**T**HE disadvantages of using industrial sacks made from 1,000 gauge low density polythene—those of cost and difficulty in handling—have been successfully overcome by a method developed by the Metal Box Co. of filling heavy gauge sacks in a frame or mould under vacuum.

Metal Box have overcome the problem of expense by a specially-designed plant which will take polythene polymer in at one end and produce the printed sack at the other. It operates at speeds far higher than is normal with tubular film production. Produced by this method, polythene Diosacks now cost about 1s 6d each.

In the past the difficulty of packing filled polythene sacks has been blamed on the slippery surface of the polythene, but it was found that in fact this was not the true cause since paper has a coefficient of friction lower than that of polythene. The real cause seemed to be the bulging shape of the bag which prevented it lying together with the others in the stack. This could not be overcome by vibration or squeezing; the contents always settled down and the entrapped air formed a bubble-like bulge.

### Filling Equipment

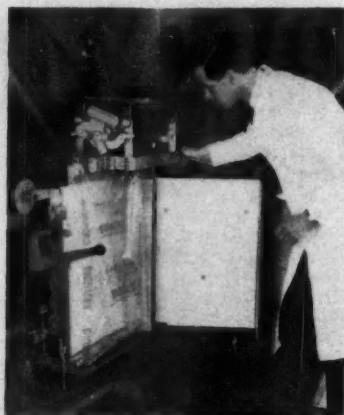
The Metal Box vacuum frame equipment basically consists of a mould or frame to give shape to the sack, a vacuum pump to remove air and heat sealing jaws to close the sack.

The empty sack is placed on the frame which is positioned under the hopper. Compressed air is then blown into the bag, so that it takes the form of the frame. A weighed quantity of granules is then dispensed from the hopper into the pack, while compressed air is still being blown into it. This prevents build up at any point in the pack and permits even distribution within the bag. The frame is then moved on to the vacuumising and sealing stages where a vacuum probe is inserted into the bag, and 8 in. to 10 in. vacuum drawn. The seal is then effected, the vacuum probe being automatically removed by the closing action of the sealing jaws.

The resulting pack is a rigid and rectangular block, easily handled and palletable.

At present the speed of filling is six 50 lb. sacks in five minutes using two units in tandem, although Metal Box aim at developing a high speed semi-automatic unit capable of filling five 50 lb. sacks in one minute.

Due to the inherent permeability of polythene film, a sack packed under the most satisfactory range of 8 in. to 10 in. of mercury vacuum will have a vacuum remaining of 1 in. after three to four



Diosack held in position on the hopper by the clamp, before the door of the frame is closed

months' storage. This is sufficient for normal handling. A trial road transport run across England showed that movement on pallets is negligible once the stack has been built, even if a sack loses its vacuum.

Vacuum frame filling of Diosacks is at present being used in the plastics industry for plastics moulding material. The U.K. production of such materials is over 400,000 tons a year, using nearly 20 million paper and polythene sacks. Almost any chemical product in granular form, including fertilisers, can be packed in a vacuum frame filled Diosack.

## Fertilisers Raise Paddy Output in Pakistan

EXPERIMENTS carried out by the Food and Agricultural Organisation in East Pakistan lead to the belief that paddy output could be stepped up from the present 12 million to 16 million tons by simple fertiliser application, according to Dr. G. Vermaat, Dutch soil fertility specialist in Pakistan for the F.A.O. Investigations indicate that many paddy soils lack not only nitrogen but also phosphates. "We now have some idea of areas where fertiliser application is economic, and can recommend the use of specific fertilisers for particular conditions with some degree of accuracy."

Since 1957, the EAO has been conducting for the Pakistan Government a rapid soil fertility survey allied with a scheme for popularising the use of fertilisers. Some 2,500 experiments have been carried out in East Pakistan, and some 1,500 in West Pakistan.

### Polypenco Set Up French Marketing Company

Their second Common Market firm has now been set up by Polypenco Ltd., Welwyn Garden City, in France. The new company, Polypenco (France), 91 Rue de Billancourt, Boulogne, will market the range of engineering plastics made at Welwyn, and will carry stocks of nylon, p.t.f.e., Fluorsint, Nylaflo tubing and hose, etc. A subsidiary was recently established at Cologne.

## 90 Attend A.B.C.M.'s Manchester Export Promotion Conference

**S**ECOND of the export promotion conferences held by the Association of British Chemical Manufacturers was staged in Manchester on 17 February (see also CHEMICAL AGE, 18 February, p. 289). Mr. G. H. Carnall, managing director, CIBA Clayton, presided for the first part of the meeting and Dr. J. E. Taylor, Unilever, for the second. There was an attendance of about 90.

Opening speaker was Mr. Niall MacPherson, Parliamentary Secretary, Board of Trade, who spoke of the mounting import bill, up 14%, in 1960. The national bill for imports was running at more than £90 a year per head of population and nearly £200 per insured employee. That meant that the national export effort must be increased if we were to continue to be able to pay for rising imports and to earn a rising standard of living.

The chemical industry's share of Britain's exports now accounted for 9% of the total, compared with 6% before the war. Mr. MacPherson asked "Can you do still better in exports as well as continuing to supply the needs of other U.K. industries for basic materials which are vital to their export efforts?" To counter-balance industries whose exports

were declining, there must be industries increasing their exports by more than the national average.

Trade bred trade, he declared, and the richer other countries became, the more they could afford to buy from abroad. Britain's interest was to promote the growth of world trade, particularly through the reduction of trade barriers—that was one of the Government's most important functions.

Mr. MacPherson described how the Board of Trade could advise exporters on all aspects of overseas trade; the Export Credits Guarantee Department was also there to provide facilities for the exporter.

### I.C.I.'s £800 Gifts to Leeds University

The following gifts have been received by the Leeds University. For the Physical Chemistry Department, £161 from I.C.I.; for the Organic Chemistry Department, £350 from I.C.I.; for Colour Chemistry and Dyeing Department, £300 from I.C.I.; for the Pharmacology Department, £400 from Boots Pure Drug, for the purchase of equipment.

## B.A.S.F. OXY-THERMAL METHOD FOR CALCIUM CARBIDE USES CALCIUM, COKE AND OXYGEN

**W**RITING in a book published in honour of the German scientist Carl Wurster ("Festschrift Carl Wurster 1960"), Günther Hamprecht and Hans Gettert, both of the Ludwigshafen-on-Rhine chemical concern, Badische Anilin-und Soda-Fabrik, give details of the experimental production by B.A.S.F. by an oxy-thermal method of calcium carbide. The process, work on which was begun at Ludwigshafen as long ago as 1949, is based on the smelting of coke and calcium to carbide with the aid of high-quality oxygen, the furnace waste gases consisting mainly of carbon monoxide.

The test plant, constructed initially for a daily capacity of 70 tonnes, was expanded to a capacity of 100 daily tonnes after the solving of a number of problems concerned with the apparatus. It enables the production of carbide of 80%  $\text{CaC}_2$  content or more in a continuous process, this degree of purity being dependent on the quality of the calcium used as feed. Although the product contains, due to the utilisation of coke, more sulphur and phosphorous than electrically smelted carbide, it does not differ from this in its important technological properties. It can be vaporised dry or wet and the acetylene developed cleaned perfectly with normal apparatus. Furnace gas produced may be cleaned or converted.

### Kiln Structure

The unit consists of a low-hearth kiln lined with heat-insulating and highly fire-proof material reinforced in its lower section with graphite or solid carbon material. Weighed-up measures of the coke-calcium feed are passed into the kiln at intervals of a few minutes through a gas-tight sluice set in the upper part of the apparatus. Waste gases leave the kiln for dust removal through two ducts, also at the top of the furnace. Placed at the bottom of the unit are copper jets for the introduction into the reaction zone, in which temperatures reach  $3,000^\circ\text{C}$ , of oxygen. These jets, specially made for the difficult operating conditions, are water-cooled and situated symmetrically and radially; they have a lifetime of several weeks each. Drawing-off takes place half-hourly or hourly with a special burner and 'poker' unit via cast-iron exit gulleys into cast-iron die wagons. The carbide 'loaves' are passed into a cooling hall and after cooling broken up to the required size. The kiln is operated fully continuously and with as constant a throughput quantity as possible, alterations in throughput easily resulting in disturbances in the process. Calcium used is of the highest possible percentage and friction durability and specially dried and sieved lump coke is used.

For 1,000 kg. of normal carbide

(carbide with 80.5%  $\text{CaC}_2$ , representing an acetylene yield of 300 l./kg.) some 2,830,000 kcal are needed, i.e. 3,195 kWh or 1,320 kg. of fuel coke with 88% C content. Material requirements for the 1,000 kg. of carbide are, apart from the 1,320 kg. of coke for heat production, 600 kg. of coke for carbide formation and some 80 kg. of coke for losses—that is, a total of some 2,000 kg. of coke in all—as well as 1,100 kg. of quicklime (or 1,200 kg. of 92%  $\text{CaO}$  quicklime inclusive of sieving and transport loss) and 1,785 kg. of oxygen  $1,250 \text{ Nm}^3$  (98%). From this 4,885 kg. of feed is produced, apart from the 1,000 kg. carbide, some 315 kg. of furnace dust and 3,500 kg.

( $2,800 \text{ Nm}^3$ ) of gas. The difference of 70 kg. ( $56 \text{ Nm}^3$  of gas) is accounted for by losses during tapping.

The furnace gas produced has an average make-up of 95.5%  $\text{CO}$ , 2.0%  $\text{H}_2$ , 2.0%  $\text{N}_2$ , 0.4%  $\text{CO}_2$  and 0.05%  $\text{O}_2$ . The difficult problem of freeing the gas of the high proportion of furnace dust was solved by the use of three consecutive cyclones, each with a dust removal potential of 50 to 60% and with a combined potential of some 90%. Further purification takes place in washing towers (to 1 to 2 g./ $\text{Nm}^3$ ) and then in disintegrators to about 0.4 g./ $\text{Nm}^3$ . The dust-free gas is then compressed by a blower and passed on for further processing. It is to such an extent free from sulphur and phosphor compounds that no process for the removal of these is necessary. This gas, which may be converted partly or fully with water vapour, is a high-quality synthesis gas and adds a good deal to the economic nature of the process.

The separated furnace dust consists of 55 to 60%  $\text{CaO}$ , 13 to 15%  $\text{SiO}_2$ , 4% elem. C, 3 to 9%  $\text{CO}_2$ , 8 to 11%  $\text{Al}_2\text{O}_3$ , 1 to 2% S, 1%  $\text{Fe}_2\text{O}_3$  and 0.2%  $\text{P}_2\text{O}_5$ .

## Largest Dracone Yet Built Carries 100,000 gall. of Kerosene

**L**ATEST and largest of the Dracone flexible, towed containers containing 100,000 gall. of kerosene, has been tested in the English Channel. A second container of similar size—200 ft. long and 10 ft. in diameter—is being constructed.

Material used is woven nylon, proofed on the inside with acrylonitrile rubber and coated on the outside with neoprene synthetic rubber. An inch-wide strip of the material, 0.237 in. thick, has a tensile strength of 2,000 lb./in. The exterior coating of neoprene ensures that the container resists abrasion, flex fatigue, sunlight, ozone, salt water, oil and grease.

The latest Dracone can carry any liquid that is more than 2% lighter than sea water. There is no need for an air space to keep it afloat and thus no risk of an explosive mixture building up inside. When loaded it has a freeboard of 22 in. and a draught of 63 in., carrying a liquid load of 350 tons. When empty it weighs 6.3 tons. Filling is done

through one connection at the tail end and unloading is carried out by suction pump.

Although this is the largest Dracone yet built, a 1,000-tonner could be constructed to-day and it is felt that a 5,000-tonner will be feasible in five years time.

Neoprene, supplied by Du Pont, was put on in layers using a neoprene-based solvent adhesive. The Dracone was constructed by P. B. Cow and Co. Ltd., Streatham Common, London S.W.16, for Dracone Developments Ltd., 1 Tilney Street, London W.1.

### New Food Research Project on Soya Flour

A new project has been started as part of the work of the miscellaneous products group of the British Food Manufacturing Industries Research Association to study the useful applications of full fat soya in manufactured foods. Mr. A. Gordon, M.Sc., A.R.I.C., will undertake this work under the general guidance of Dr. A. McM. Taylor.



Latest 200 ft. Dracone undergoes trials on Southampton Water with a load of 100,000 gall. of kerosene



## Bookshelf

# OXIDE CERAMICS TRACED FROM CRAFT TO SCIENCE

**OXIDE CERAMICS: PHYSICAL CHEMISTRY AND TECHNOLOGY.** By *E. Ryshkewitch*. Academic Press, New York, 1960. Pp. viii + 472. 114s 6d.

Ceramics constitute one of the oldest of all crafts and like many other branches of technology that began as crafts, the application of a scientific approach has come late in the day. The scientific study of ceramics began within the lifetime of the author and he has devoted himself to its development. He chose to consider ceramics of single phase oxides systems because the elementary processes involved in their preparation and use can be discerned more readily than those of the classical complex silicate ceramics. He has reaped his due reward as interest in the oxides increases with the search to discover materials to withstand higher and higher temperatures.

This is not a revised translation of 'Oxydkeramik der Einstoff-Systeme', published by Springer in 1948, but a new book based on the old one; a high proportion of the references are to recently published work. The first 100 pages are devoted to 'General fundamentals of oxide ceramics', thereafter the sintered oxide ceramics are described with principal headings of alumina, spinel, magnesia, beryllia, and zirconia. The bulk of the space is devoted to fundamentals and little to applications. Those concerned with ceramics will want to have this book by them for quick reference, and scientists with no direct interest in the technology will find that the book contains a wealth of interesting information.

## ► Electronic Spectra Data

**ORGANIC ELECTRONIC SPECTRAL DATA.** Edited by *M. J. Kamlet*. Interscience, New York, 1960. Vol. 1, 1946-52. Pp. xiv + 1208. 215s. Vol. 2, 1953-55. Pp. x + 919. 132s.

There can be few chemists who do not sometimes make use of electronic spectral data. Since spectrophotometers have become standard equipment in all sizeable laboratories, many workers have been driven to determining the spectra for themselves because it has been a considerable task to find the spectra in the literature.

The present volumes go far beyond anything previously attempted; they cover compounds of all types. The main text lists the compound's molecular formula (which determines its position), its name, the solvent used, the wavelength of the

absorption maximum and the logarithm of the extinction coefficient, and the journal reference. Two more volumes to cover 1956-59 are in an advanced state of preparation and editors have been appointed to carry the work through 1961.

This publication will be extremely useful and should be regarded as a necessary companion to all spectrophotometers devoted to organic work. The price can only seem high to someone who has not considered the tremendous task of compilation, and the amount of time that can be saved by its use.

The only suggestion for the improvement that one can offer to the editors is that there should be an indication of those references that contain a reproduction of the spectra and not just a list of maxima.

## ► H<sub>2</sub>SO<sub>4</sub> Production

**DIE SCHWEFELSÄUREFABRIKATION.** By *Waeser*. Friedr. Vieweg und Sohn, Braunschweig, 1960. Pp. 488. DM76.

This supplementary volume to the 'Handbuch der Schwefelsäurefabrikation' (Waeser-Lunge) is concise and complete in its coverage. Dr. Waeser who provides chapters on the general and theoretical foundation, patent literature (2,250 references), corrosion problems and the economics of manufacture (153 pages) is joined by other experts in dealing with the technical production, purification, and liquefaction of sulphur dioxide; the greater relative importance of the contact method is emphasised by an exhaustive chapter of 174 pages. The chapters dealing with the manufacturing process give a compact survey of older methods followed by adequate accounts of up-to-date techniques.

This is not a book for the academic scientist. It should, however, be extremely valuable for metallurgists, plant builders and for chemical engineers.

## ► Semi-micro Analysis

**SEMI-MICRO QUALITATIVE INORGANIC ANALYSIS.** By *R. E. Darby*. University of London Press, 1960. Pp. 47. 4s 6d.

This is a concise account of an application of semi-micro techniques to a conventional system of analysis tailored to fit the syllabuses of particular examina-

tions. The opening section on pieces of apparatus and their uses is helpful, though the diagrams of the effect of a mouth blow-pipe on a bunsen flame are not convincing. The tests advocated are, on the whole, adequate for the level intended but some mixtures containing stannous ions might prove troublesome. The advice on p. 25 to consult the supervisor if the original substance "is found to be insoluble in any of the above reagents" (including water) is not likely to be appreciated by the supervisor. The addition of tests on the original mixture for the original valencies of some metals would be an improvement.

The text is illustrated copiously with equations which are welcome, but in many cases ionic equations instead of complete overall equations would be clearer and less intimidating. Similarly the inclusion of a model analysis is helpful though the particular example implies that most of the results can be obtained from a few preliminary tests which is rarely so unless the analyst has had considerable experience. Individual teachers may not approve all the tests included.

## ► Effects and Laws

**A DICTIONARY OF NAMED EFFECTS AND LAWS IN CHEMISTRY, PHYSICS AND MATHEMATICS, 2ND EDITION.** By *D. W. G. Ballentyne* and *L. E. Q. Walker*. Chapman and Hall, London, 1961. Pp. vi + 234.

The authors have set themselves an impossible task in attempting to compile a dictionary of this type in less than 250 pages, which only allow for about 1,500 entries. They include named chemical reactions and their difficulties are neatly exposed by a book recently noticed in these columns which lists 739 such reactions. A quick check reveals many omissions such as Born-Oppenheimer approximation, Russell-Saunders coupling, Hund coupling, Jahn-Teller effect, Einstein law of photochemical equivalence.

This book was first published in 1958 and the fact that it has been revised and republished within three years indicates considerable sales. It is not easy to guess who the original purchasers were. The coverage of, say, chemistry is far too sketchy for the chemist, so one must suppose that the authors chiefly wrote for the scientist seeking information in fields with which he was unfamiliar. The non-specialist would, however, not appreciate the far-reaching importance of 'Planck's Quantum Theory' from the entry on p. 172. This volume is altogether too slight to serve as a satisfactory reference work, though one can come across some useful and interesting information by flipping through the pages.

On the lighter side the authors give Parkinson's Law but not the Pauli effect (all physical apparatus malfunctioned at the approach of the Nobel laureate) or the Falstaff (Nernst's proposed unit of flow; litre sec.<sup>-1</sup>).



## Overseas News

## DU PONT AND STAUFFER FORM MEXICAN FLUOROCARBON COMPANY

A NEW Mexican company, Halocarburos, S.A., is being formed by Industrias Químicas de Mexico, S.A., of Mexico City to produce Freon fluorinated hydrocarbons. The new company will mark the first Mexican production of fluorinated hydrocarbons, which have been imported during the past 15 years. It will result in an annual saving for Mexico of Pesos 6 million in dollar exchange.

Industrias Químicas de Mexico, S.A., an affiliate of Stauffer Chemical, New York, and other Mexican capital will own 75% of the new company, and E.I. du Pont de Nemours and Co. Inc., of Wilmington, Delaware, will contribute 25%.

In the manufacture of fluorinated hydrocarbons, Halocarburos, S.A., will acquire the use of Freon trademarks, know-how and engineering assistance from du Pont. The new Mexican company will build plants for both Freon and carbon tetrachloride on an existing site owned by Industrias Químicas de Mexico in Santa Clara. The plants are expected to go on stream about mid-1961. (Allied Chemical also have joint fluorocarbon interests in Mexico—C.A. 30 July and 17 September, 1960).

The plant for Freon will have an approximate capacity of 3 million lb./year and the carbon tetrachloride plant will produce about 4 million lb./year. The two plants will represent a joint investment of about Pesos 15 million.

### India Trebles Output of Calcium Carbide

Production of calcium carbide in India is now 8,964 tons, treble the figure of four years ago. Annual capacity of the two current units is 17,000 tons, which will be raised to 31,200 tons when a new unit starts production shortly in Bombay. A further unit is due to go on stream in Kerala by October 1962 and another should be commissioned in Delhi by 1964. The 1964 capacity is expected to be 56,500 tons. Demand for calcium carbide is expected to be 20,321 for 1960-61 and 60,963 tons by 1965-66.

### New Process Produces Accurately Graded Granules

The Hungarian mechanical engineer, Andor Kertész, is stated to have developed a process and new equipment by which granulation can take place some 60 times more quickly than by conventional pelletisation methods. Patents have been applied for for the process, which is based on a vibration principle and by which granules can be produced in from 8 to 30 sec. For the production of small granules—for medicinal products, fertilisers etc.—the unit works to a single-

stage process and for that of larger pellets (5 mm. to 25 mm.) the operation consists of two or more stages.

Granules produced by the process are almost spherical and of a high degree of uniformity, requiring no subsequent grading. The granulation process is of a continuous nature. For the granulation of powder ore into pellets of from 4 mm. to 5 mm. at an output of 10 tonnes per hour a process vessel of only 30 l. capacity is needed, this capacity rising to 70 l. for the production of superphosphate granules of the same size, dimensions claimed to be favourably small.

Experiments with the Kertész machine in the pharmaceutical field have determined a powder content of only 0.5% in certain granulated pharmaceuticals as against a powder content as high as 65 to 75% with systems used so far. This very small powder content may be reduced even further if larger-size granules are being produced.

### Russians Use Ultrasonics To Polymerise Styrene

A new Soviet study of the polymerisation by ultrasonics of styrene in aqueous emulsions in the absence of conventional initiators has shown that polymerisation takes place only in the presence of small amounts of polystyrene. This has been interpreted by the Russians as a confirmation of the mechanochemical effect of ultrasonics. Addition of polystyrene to a system containing an initiator (potassium persulphate) and treated by ultrasonics slows down the polymerisation rate. This was attributed to a recombination of free radicals formed as a result of the mechanochemical effect of ultrasonics and as a result of the decomposition of the initiator.

### Japanese Vinyon Rights For Hoechst

Polyvinyl alcohol and vinyl fibres will be produced by Farbwerke Hoechst AG under licence from Kurashiki Rayon of Japan. Royalties will be paid by Hoechst for production of these products under the same conditions as those which were agreed on with Rhône-Poulenc in February 1959.

Companies in England, the U.S.S.R. and Italy are also trying to reach a similar agreement with Kurashiki.

### New Bayer Process Gives Cheaper NaBH<sub>4</sub>

Farbenfabriken Bayer AG, Leverkusen, West Germany's biggest chemical producer, have announced the development of a new process for the production of sodium borohydride (NaBH<sub>4</sub>). This results in

considerably cheaper production and the possibility of large-scale use of the chemical in such industrial branches as plastics and paper manufacturing. The product is made from borax, sand and sodium in a hydrogen atmosphere of 3 atm. and supplied as a white, crystalline and stable salt. Sodium borohydride is of particular importance in the selective reduction of organic compounds, for the production of hydroborons and borazanes, for the development of hydrogen, for the foaming of plastics and for paper bleaches.

### New U.S. Polythene Maker Will Use Phillips Process

The Phillips Petroleum process will be used by U.S. Industrial Chemicals for a 60 million lb./year high-density polythene plant they plan to build at Houston, Tex. This is in addition to their 200 million lb./year high-pressure polythene plant at Houston. The new plant should be on stream late next year. U.S. output of the high-density material is estimated at 210 million lb. in 1960, which means a current over capacity of some 150 million lb.

### Shawinigan to Sell Marlex Polythene

Canadian Resins Division of Shawinigan Chemicals Ltd., Montreal, has been appointed distributor for Marlex high density polyethenes, ethylene copolymers, and tailored resins made by Phillips Chemical Co., Bartlesville, Okla.

### Indian N.R.D.C. Licences New Chemical Processes

A process for the production of sodium carboxymethyl cellulose, licenced by the National Research and Development Corporation of India, is in production by Sardesai Brothers, Bilmora, on a 600 lb. batch basis. Output is being stepped up and should reach 1 ton a day by March this year.

New licences have been negotiated for the commercial development of maleic anhydride from benzene, mixed phosphorus fertiliser, glacial acetic acid, salicylaldehyde, salicylic acid, and resins from tar oil fractions.

### French 1960 Production of Organics Up

A considerable production increase is reported by the French organic chemicals industry for 1960 over the previous year. Output figures now issued from Paris include 49,000 (38,000) tonnes of acetone, 70,000 (46,000) tonnes of methanol, 54,000 (40,000) tonnes of phenol and 29,000 (26,000) tonnes of phthalic anhydride.

### Cheaper Pine Oil Produced by Indian Process

A process for the synthesis of pine oil has been developed at the Indian Agricultural Research Institute. The process which is the subject of Indian Patent No. 48489, consists of the treatment of Indian turpentine with a mixture of methyl alcohol and sulphuric acid in a lead-lined mild steel reactor. The pine oil produced

is separated and purified by washing and distillation.

The cost of the pine oil produced in this way is 1s 4d per lb compared with 5s 3d per lb for the imported material. A commercial unit to produce 1 ton per day is estimated to cost in the region of £16,900.

Further details regarding the licensing of the process are available from the Secretary, National Research Development Corp., Lytton Road, New Delhi 1, India.

### U.S. Polypropylene Fibre Plant for Novamont

A 25 million lb./year polypropylene fibre plant is to be built by the U.S. Montecatini subsidiary, Novamont Corporation, alongside their polypropylene resin unit at Neal, W. Va. The resin plant is due on stream this summer, while start-up of the fibre facility is scheduled for early-1963.

### Yugoslav Chemical Plant Credit for Egypt

Chemical plant is covered by a credit amounting to \$20 million granted by Yugoslavia to the United Arab Republic for the equipping of industrial projects in the Egyptian region of the republic over the country's current Five-Year Plan.

### E. German Output Rises For P.V.C., Soda, etc.

About 58,600 tonnes of p.v.c. powder were produced in East Germany last year, or 4% more than in 1959. Output of acrylonitrile rose over the same period by 18% to 1,155 tonnes.

Over last year some 593,700 tonnes of calcined soda and 327,000 tonnes of caustic soda were produced in East Germany; these figures are higher by, respectively, 6% and 8% than those for 1959.

### Dow Plan Second Polyolefin Plant

A plant to produce polypropylene, high and medium density polythene and ethylene copolymers is planned by Dow to be constructed at their Plaquemine, La. site. The plant which should be completed by mid-1962, is the second polyolefin plant on the site.

### Chemical Warfare Media from East Germany

V.E.B. Chemische Werke Radebeul, Radebeul, East Germany, are reported to be developing a range of chemicals for use in chemical warfare for the Ministry of National Defence. The media concerned are based on organic phosphoric acid esters and phosphoric acid amides.

### Polyformaldehyde Competition for Du Pont

A semi-commercial plant for polyformaldehyde is planned by Heydon Newport of U.S., who will market the material early in next year. As stated in *CHEMICAL AGE* last week, p. 283, the world's only producers are E.I. du Pont

de Nemours, although Celanese of America are believed to have plans for commercial production.

### 112.5 m. Rouble Credit for Indian Project

Under an Indo-Soviet agreement signed in New Delhi on Tuesday, the U.S.S.R. will grant credits of 112.5 million roubles, or about £40,674,600. This will be used to finance a number of projects, including a 2 million tons/year oil refinery in Gujarat State; a refractory plant near Bhilai, Central India, for the production of some 125,000 tons/year of magnesite and fireclay products; exploitation, development and production of oil and gas in Cambay, Anklesvar and other areas; the production of pumps and compressors; the preparation of a techno-economic report; and the provision of technical assistance and know-how.

### Soviet Work Produces New Synthetic Resin

A new resin, Ekra, has been obtained in a laboratory synthesis from  $\epsilon$ -caprolactam, ammonium thiocyanate and zinc chloride. The initial substances react readily at 20°C in a hydrochloric acid medium, yielding 85% by weight of resin. Ekra is a colourless, transparent, liquid-viscous product, which can be used for the synthesis of polythiocyanate-epoxy rubber or resin, for the production of adhesives, and in the varnish, paint and plastics industries. The developed process is fast and simple, and it is claimed that it could make possible the continuous production of this resin on a large scale.

### Poland to Build Complex Based on Natural Gas

A large chemical complex is to be erected in Pulawy, Poland, to process natural gas obtained under an agreement with the U.S.S.R. The first unit, with a

daily output of about 810 tonnes of ammonia, is to be completed in 1965. Another unit will produce acetylene for the manufacture of plastics.

### Germany Supplies 28% of Sweden's Chemical Imports

During the period January-October 1960 the value of Swedish chemical imports from Western Germany was 261.7 m. kronors—nearly twice as much as chemical imports from the U.K., 139.7 m. kronors—out of a total from all sources of 937 m. kronors.

### Oxo to Build Isooctyl and Decyl Alcohol Plant

The newly formed U.S. company, Oxo Chemicals, jointly owned by Pittsburg Chemical Co. and Amoco Chemicals Corp., will start construction on their isooctyl and decyl alcohol plant in the spring of this year. The plant, which is scheduled for completion early in 1962, is said to be a multimillion-lb.-a-year plant.

### Uruguay Lifts Charges on Fertiliser Imports

Steps to promote the greater use of fertilisers and to reduce their cost have been taken by the Government of Uruguay. Imports of fertilisers and raw materials for their manufacture will be free of surcharges or prior deposits and will be exempt from Customs charges. Subsidies will also be established in favour of producers and users.

### Soya Bean Processing Plant for Italy

A plant for processing soya beans went on stream recently at Ravenna with an initial capacity of 75,000 tonnes of beans a year. This capacity, however, will shortly be doubled. A 20,000 tonnes per year plant is also planned.

Soya bean oil is used in soap manufacture and as a substitute for linseed oil in the production of paints and varnishes.

## Industry May Help U.S.A.E.C. on Gas Centrifuge Research

UNITED STATES industry may have the chance of handling research and development work on certain aspects of the gas centrifuging process for separating heavy isotopes, which has hitherto been kept under strict security by the U.S. Atomic Energy Commission. If a proposal made by Mr. John McCone, A.E.C. chairman, is implemented, industry will be given access to some sections of the field and allowed to make use of any developments which result.

Practical use of the gas centrifuge method for producing weapons material is several years away, according to Mr. McCone. The process would not be simple or cheap, but, if successfully developed, a production plant using the gas centrifuge method could be simply housed and its power requirements would be relatively small.

Mr. McCone's statement accompanied

a report issued by the A.E.C. which notes that, even after substantial improvement has been made, thousands of gas centrifuges would probably be required to produce enough enriched uranium for one crude weapon per year. Including auxiliaries, a plant of this type might cost several thousand dollars per centrifuge.

Development work on the gas centrifuge process has also been carried out in West Germany and the Netherlands, and both these countries have been urged by the U.S. to give consideration to the control of gas centrifuge technology. The West German Government recently announced that it has taken steps to control the dissemination of information on the process, while the Netherlands Government is believed to be studying the question of applying controls. The U.K. follows classification criteria similar to those of the U.S. on the gas centrifuge process.



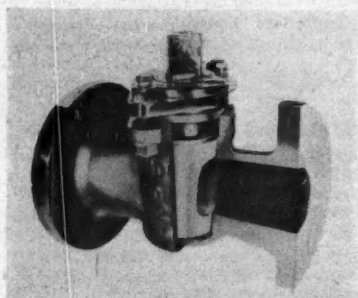
**LOW HEAD COOLING TOWERS**

Low head cooling towers, featuring Poly-grid polystyrene packing, have been introduced by **Head Wrightson Processes Ltd.**, 20/24 Old Street, London E.C.1, in collaboration with their American associates, the Fluor Products Co. The new towers, of timber construction and employing the countercurrent principle, are specially designed for small industrial duties including air conditioning and refrigeration.

Series 2 are induced draught, horizontal air flow units designed to meet lower profile requirements, maximum height to top of fan stack being less than 8 ft. regardless of tower cooling capacity. For air conditioning and refrigeration services, standard single cell installations can be offered ranging from 60 to 300 tons. Combinations of standard cells may be used to meet greater cooling requirements.

Series 3 are designed for intermediate cooling capacities utilising standard cell selections, tower height to fan deck being 9 ft. or 11 ft. 3 in. Series 4 will handle duties up to 900 tons capacity and multi-cell arrangements are available to meet any cooling requirement.

Tower height to fan deck is 17 ft.; the static pumping head is 15 ft. 8 in.

**P.T.F.E. SLEEVED VALVES**

Cut-away view of one of a new range of Audco valves with p.t.f.e. taper sleeved plugs, providing extra corrosion resistance and eliminating the risk of sticking due to metal-to-metal contact. Valves in sizes from  $\frac{1}{2}$  to 2 in., 3 in. and 4 in. are available in stainless steel, from  $\frac{1}{2}$  to 2 in. and 3 in. in Audcoloy (austenitic alloy cast iron of the high nickel, high silicon type) and  $\frac{1}{2}$  to 3 in. in cast iron. Makers: Audley Engineering Co. Ltd., Newport, Shropshire

**INDUSTRIAL LIQUIDS COOLER**

ORIGINALLY designed to cool to predetermined temperatures lubricants such as the coolant oil used on boring, grinding and honing machines a unit manufactured by **L. Sterne and Co. Ltd.**, 158 North Woodside Road, Glasgow N.W. can also be used for cooling liquids used in industrial processes, including water. It comprises a Sterne hermetically sealed motor compressor using Refrigerant 12, a finned air-cooled condenser and propeller fan, a receiver and strainer-dryer, all mounted

Low head cooling towers, featuring Poly-grid polystyrene packing, have been introduced by

# EQUIPMENT NEWS

## Chemical Plant : Laboratory Equipment : Control and Indicating Instruments

on a common base plate. The lower half of the unit houses the cooling coil which is of the tube-in-tube type, the liquid to be cooled being circulated over a coil of evaporating refrigerant. A pocket is fitted in the liquid outlet for the thermostat phial, the actual temperature of the liquid being controlled automatically. The unit is wired for normal power supplies and is fitted with a starting relay and safety switch.

**STURDY CABINET HANDLES**

CABINET handles designed to meet both laboratory and large-scale requirements in the chemical and allied industries are available from **Fenny Electrical Co. Ltd.**, 33, Aylesbury Street, Bletchley, Bucks.

They are manufactured from mild steel bar with ends tapped or threaded and finished in high quality chromium plate and are supplied complete with either nuts or screws and washers to suit individual requirements. According to the makers, they can bear a considerable weight without any distortion.

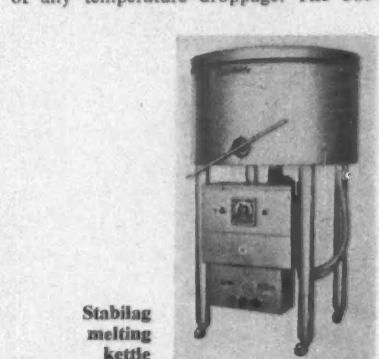
Special sizes, outside the large standard range, can be made.

**ELECTRIC MELTING KETTLE**

AN electrically heated melting kettle now available can be used for heating high-viscosity materials to a pouring density. The standard design is the result of many different tailor-made models, says the makers, the **Stabilag Co. Ltd.**, Mark Road, Hemel Hempstead, Herts.

The model illustrated was specially adapted to melt carbon wax; it is complete with thermostatic control and is supplied with a heated hose of 2 in. nominal bore and 3 ft. long. This heated hose, together with the valve, is controlled by the same thermostat that controls the contents, thereby allowing all the contents of the kettle to drain cleanly through the valve and pipe, as wax coagulated very rapidly in the event of any temperature droppage. The out-

let valve is operated by a lever centred over the control panel.



Stabilag melting kettle

The kettle itself has a total capacity of 10 gall. and is heated by the standard Stabilag multi-tiered heating zone principle, with a total power of  $5\frac{1}{2}$  kW—the main tank consuming 4 kW, while the valve and hose use 1,250 W. Castors on the legs make the whole unit very manoeuvrable.

Price for this 10-gall unit complete with built-in thermostatic control, 2 in. nominal bore hose, and a 2 in. bottom outlet valve, is £238. Specials can be made to order and a standard 20-gall. unit will soon be available at £275.

**SEALED MOTOR BASE FOR BLENDERS**

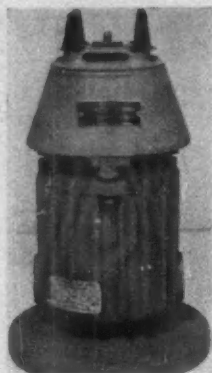
EXPLOSION hazards which may occur when mixing certain volatile liquids and organic materials are said to be eliminated by a high speed blender motor base

**MERVYN-HARWELL SQUARE WAVE POLAROGRAPH**

The Mervyn-Harwell square wave polarograph, Mark III, briefly described in C.A., 21 January, p. 147. The partially withdrawn unit on the left shows the accessibility of the components. Suppliers are Mervyn Instruments Ltd., St. John's, Woking, Surrey







Explosion-proof motor base

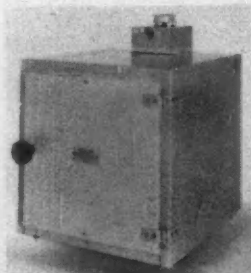
which is made in the U.S. by the Waring Products Corporation and is being marketed by the Waring Division of Winston Electronics Ltd., Shepperton, Middlesex. Manufacture in the U.K. is contemplated at a later date.

Mixing speeds of 8,000 or 16,000 r.p.m. are provided by the unit, which has been used in the U.S. for mixing operations involving petrol, naphtha, benzene, butane, propane, alcohol, acetone, benzene, natural gas and solvent vapours. Designed to be used with the Waring Pyrex glass containers and the SS-510, of approximately 1 quart capacity, but not the CB-4 1 gall. container, the EP-1 Waring blender base and motor is claimed to be more than an enclosed motor a totally sealed unit which has a Class 1, Group D rating of the Underwriters' Laboratories of the U.S.

The Waring EP-1 is sold as a blender base only, since most laboratories and factories liable to experience explosive or ignitable atmospheres have a master explosion-proof switch. However, the switch is available on request. Price of the EP-1 base is £120 with Pyrex container and £125 with stainless-steel container.

#### THERMOSTATIC LABORATORY OVEN

PRICED at only £15 15s, a new thermostatic oven is stated to be suitable for most general laboratory purposes. Constructed throughout in mild steel, the exterior being finished in cloud grey stoving enamel, it has overall dimensions of 12 in. by 15½ in. by 15½ in. high. The heating



Pickstone laboratory oven

chamber is finished with a high temperature resisting aluminium coating and is fitted with two 1-in. Weldmesh trays. The exterior is insulated from the heating chamber with Fibreglass and the door is of the insulated cavity type with a simple locking device. Fittings include thermometer aperture, on/off switch and calibrated thermostat control knob.

Operating temperatures are from 5° above ambient to 200°C, temperature fluctuation is of the order of  $\pm 2^\circ$  at 200°C. Power consumption is 300 W. A.C., single phase, 50 cycles, 200/250 V. The heating element is of 80/20 nickel chrome, insulated with glass and enclosed in a metal case positioned towards the back of the heating chamber.

Makers are R. E. Pickstone Ltd., 36 Avon Trading Estate, Mornington Avenue, London W.14.

#### ELECTROPHORETIC SUPPORT

A SUPPORT medium for electrophoretic separations of chemicals, composed of a thin microporous cellulose acetate sheet, is offered by Gelman Instrument Co., 106 North Main Street, Chelsea, Mich., U.S. In use, a strip of Microphore is first wetted in buffer, then placed on a special bridge support. A small amount of a compound to be fractionated is placed on the Microphore and an electric current is applied to the strip. Proteins, dyes and other compounds can be separated in this manner into many different fractions.

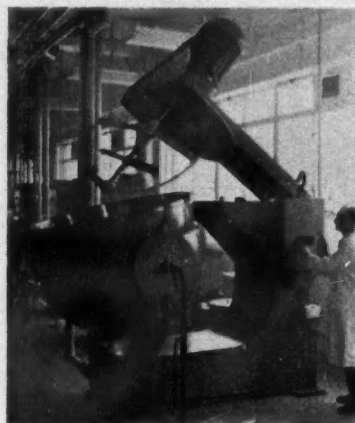
A booklet, available from the manufacturers, dwells on the advantages of Microphore over filter paper. It also discusses the structure of membrane filter, describes a new vacuum pump, flowmeters, and briefly air sampling techniques and equipment.

#### THIN-LAYER CHROMATOGRAPHY EQUIPMENT

THE U.K. agency for the Desaga chromatography apparatus has been secured by Camlab (Glass) Ltd., Milton Road, Cambridge, who are carrying stocks of the basic equipment for the thin-layer technique. This technique is an adsorption-chromatographic quick method which makes possible the separation of minute amounts of substances, by micro methods, in not more than 30 minutes on a path of only 10 cm. The carrier material consists of special glass plates which are prepared with a purely organic, firmly adhering, layer of silicagel 'G' Merck. On a normal plate, 10 separations can be carried out simultaneously. After use, silicagel 'G' layers can easily be rinsed off the plates, which are then ready for further experiments. Coated glass plates can be compared, in a certain sense, with 'open adsorption columns' i.e. a change from the close column method of Tswett to an open column method, modified as above.

Silicagel 'G' layers are claimed to permit the use of even the most aggressive spray agents, heating till charring of certain substances, and the rendering visible of colourless substances by Ultra-

#### STEAM JACKETED PAN



This 200-gall. steam jacketed tilting pan, believed to be one of the largest of its type built in the U.K., was designed to meet the special requirements of Helena Rubinstein Ltd. and was built by T. Giusti and Son Ltd., 210/212 York Way, King's Cross, London N.7. It is push-button operated and has a counter-rotating agitator unit with four speed drive. The agitator assembly is lifted by a motorised hydraulic ram. Tilting of the pan is effected by a hand wheel and gear mechanism.

#### REFRACTOMETER WITH DIGITAL READOUT

MEASUREMENT of small differences in the index of refraction of liquids is possible with a new digital refractometer which makes use of a null meter and direct digital readout to measure changes as small as 0.0000005 index of refraction units. The electronic null circuit replaces the eyepiece of the microscope and the digital readout eliminates the errors that can be introduced when comparing samples with the human eye.

Model 107A is provided for research investigations in liquid chromatography, molecular weight measurements, ion exchange studies and pilot plant evaluations of new products. The research model is usually provided uncalibrated. Model 107B is provided for quality control of batch or continuous processes. It is factory calibrated for a particular application. The small size (11½ in. by 5½ in. by 7 in.) and light weight make the instrument readily portable.

The two instruments are used for the quality control and analysis of liquid mixtures, such as the measurement of the sugar content of fruit juices, beverages and syrups, the degree of hydrogenation of fats and oils, the salinity of brine solutions, liquid chromatographic detectors, ion exchange measurements and molecular weight determination. Made in the U.S. by Waters Associates, Framingham, Mass., they are distributed in the U.K. by Scientific Furnishings Ltd., Poynton, Cheshire.

## CLASSIFIED ADVERTISEMENTS

Continued from page 344

## SITUATIONS VACANT: continued

**QUALIFIED CHEMIST** required by The Midland Tar Distillers Limited in the Applied Research Section of the Refinery Division at Four Ashes, near Wolverhampton. The Laboratories are situated in pleasant rural surroundings within easy reach of Wolverhampton, Stafford and Cannock. The work has considerable variety and deals with coal-tar derivatives. This is an important post and a Degree in Chemistry, or A.R.I.C. is an essential qualification. Starting salary will depend upon age and qualifications and within £800-£1,100 p.a. A contributory pension scheme with a generous life assurance is in operation. Assistance will be given in meeting removal expenses. Prospective applicants please send postcard for application form to: Personnel Officer.

**Committee Secretary** required by the Electrical Research Association for duties involving the servicing of Technical Committees concerned with dielectrics and electrical insulating materials. Applicants should be of sound educational standard. Previous experience with the oil or plastics industries would be an advantage.

Commencing salary within the range £800 to £900 per annum, depending on qualifications and experience. Applications, stating age, qualifications, experience and present position, to be sent to—

The Personnel Officer,  
Electrical Research Association,  
Cleeve Road,  
Leatherhead, Surrey.

## PHYSICAL CHEMISTS

A research programme of great scope and interest covers high polymers, inorganic and organic pigments, etc., in surface coatings over a variety of substrates.

Physical chemists are required for basic work in this field. Previous research experience although desirable is not essential. Salaries will be commensurate with age and experience, with F.S.S.U. superannuation.

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● **Dr. Charles Franklin, B.Sc., Ph.D.**, principal scientific officer at the British Ceramic Research Association, Stoke-on-Trent, became research manager at the Barlaston factory of Josiah Wedgwood and Sons Ltd., on 20 February. He joined the staff of the Armament Research Department, Woolwich, in 1939, working on small arms ammunition problems. Later, his group was transferred to the R.O.F. Swynnerton (Staffs) where he was engaged on the performance of high explosives, etc. Dr. Franklin joined the British Ceramic Research Association in 1946; he now succeeds **Mr. E. O. Mills**, who had been with Wedgwood for 15 years.

● **Mr. A. F. Williams, B.Sc., F.R.I.C.**, research and development department, I.C.I. Nobel Division, Stevenston, Ayrshire, was elected chairman of the Scottish Section, Society for Analytical Chemistry, at the recent annual meeting in succession to **Mr. A. N. Harrow, A.H.W.C., F.R.I.C.** **Dr. R. A. Chalmers, B.Sc.**, was elected vice-chairman, and **Mr. J. Brooks, M.A., A.R.I.C.**, research and development department, I.C.I. Nobel Division, Stevenston, was appointed hon. secretary and treasurer.

● **Mr. Harry Williamson**, managing director of Fischer and Porter Ltd., Workington, Cumberland, has also been appointed managing director of Fischer and Porter (N.V.), The Hague. The appointment signifies increasingly close co-operation between the U.K. and Con-



Harry Williamson

tinental affiliates of the U.S. flowmeter and process control instrument manufacturing concern Fischer and Porter Company, Warminster, Pa. Mr. Williamson, who is 36, was chief development engineer for Negretti and Zambra Ltd. until 1957, when he joined Fischer and Porter Ltd. in a similar capacity. Shortly afterwards he was appointed managing director. He is also a director of Chlorination Equipment Ltd.

● **Dr. Dorothy M. Farmer, B.Sc., Ph.D., F.R.I.C.**, who has been made the first lady fellow of the Plastics Institute, is librarian at the British Plastics Federation.

● **Mr. K. Jackson** has been appointed accident prevention officer for the Pfizer Group of companies. Part of his job will be devising new safety procedures in the Group's Sandwich and Folkestone factories and at the Fine Chemicals

## PEOPLE in the news

Division at Bromley-by-Bow, London. He was formerly with the Associated Ethyl Company in Cheshire and with the Alkali Division of I.C.I.

● **Mr. Zoltan Merzei** has been elected a vice-president and general manager, European operations, of Dow Chemical International Ltd. S.A., a subsidiary of the Dow Chemical Co., Midland, Mich., U.S. He will continue to make his headquarters in Zurich, Switzerland. A Canadian citizen, Mr. Merzei joined Dow in Canada in 1949, and has spent most of his time in Dow International activities—most recently as general sales manager for the European area. He is also on the board of several Dow subsidiaries and associated companies abroad.

● **Mr. T. E. Rymer, F.R.I.C.**, who has been appointed public analyst and agricultural analyst for the counties of East and West Sussex and the county boroughs of Brighton, Eastbourne, Hastings, Hove and Worthing, is joining **Mr. J. Redman, F.R.I.C.**, in the analytical and consulting practice of Rymer and Redman, 1 Offham Road, Lewes, Sussex.

● **Mr. Berthold Gamer and Dr. Robert Zoller**, vice-directors of Farbwerke Hoechst AG, Frankfurt, have been made directors of the company. **Dr. Werner Schultheis** has joined the company's board to replace **Dr. Gustav Ehrhart**, who retired at the end of last year.

● **Mr. D. D. Rintoul** has been appointed sales controller for Williams (Hounslow) Ltd., dyestuffs producers, and **Mr. A. F. H. Miles**, right, has become sales development officer.

● **Mr. D. L. Campbell** has resigned from the board of Campbell, Gifford & Morton on his appointment as managing director of the newly-formed Davy-Ashmore Export Ltd.

● **Mr. C. J. House, B.Sc., A.R.C.S., F.R.I.C.**, Jacksonard House, 16 Deansgate, Manchester, was elected vice-chairman of the North of England Section, Society for Analytical Chemistry, at the recent annual meeting. As stated in 'People in the News', 11 February, **Mr. J. Markland, B.Sc., F.R.I.C.**, was

appointed chairman. Hon. secretary and treasurer is **Mr. B. Hulme, B.Sc., F.R.I.C.**, Ch. Goldrei, Foucard and Son Ltd., Brookfield Drive, Liverpool 9.

● **Mr. John O. Logan, B.S.**, a vice president, has been appointed general manager of the Chemicals Division, Olin Mathieson Chemical Corporation, Baltimore. He holds several U.S. patents on pulp bleaching and generation of chlorine dioxide. **Mr. B. N. Schrauf, B.S.**, is appointed director of marketing for the organic chemicals operation of Olin Mathieson Chemical Corporation, in succession to **Mr. L. E. Russell**, who has resigned.

● **Major William Logan**, general sales manager of Avo Ltd., has been appointed sales director. Avo, members of the Metal Industries Group, manufacturers measuring instruments, etc., who have works in Vauxhall Bridge Road, London S.W. Major Logan is a member of the council of the Scientific Instrument Manufacturers' Association.

● **Dr. Otto Reuleaux**, chairman of Kali-Chemie AG, Hanover, has been presented with the Federal Cross of Merit, with Star, of the Federal German Republic.

● **Mr. Jonathan Guinness** has been appointed a director of Arthur Guinness Son & Co. Ltd. He is the son of **Lord Moyne**, vice-chairman of the company.

### Obituary

● **Dr. Hans Liptan**, director of the West German chemical company Wasag-Chemie AG, has died.

The death is announced of **Dr. Walter Schmidt**, chairman of the I. G. Farbenindustrie in Liquidation, Frankfurt-on-Main, and a director of Deutsche Solvay-Werke GmbH, of Solingen.

**Professor Dr. H. I. Waterman**, director of Chemisch Fabriek Naarden, the Netherlands, has died at the age of 71.

### Wills

**Mr. A. E. Beesley, Ph.C., M.P.S.**, formerly on the analytical staff at the Wellcome Chemical Works, Dartford, who died on 27 August 1960, left £7,683 gross, £7,504 net (duty paid £230).

**Mr. Charles Samuel Garland**, former Unionist M.P. for South Islington, president, National Union of Manufacturers, 1956-58, and formerly president of the Institution of Chemical Engineers and of the British Association of Chemists, who died on 6 December, left £217,146 net (duty paid £92,412).

**Mr. Thomas Ainslie Robertson**, late chairman of Glasshouse Crops Research Institute and Chipman Chemical Co. Ltd., first managing director of Plant Protection Ltd., who died on 23 November, aged 70, left £21,780 net (duty paid £2,880).



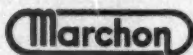


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## Commercial News

### William Boulton

Jesshope (Holdings) Ltd. are bidding for the issued capital of William Boulton Ltd., Burslem, manufacturers of laboratory and other equipment. The offer is two 1s shares plus 2s cash for each 2s share of William Boulton.

### British Oxygen

A one-for-two scrip issue is to be made to ordinary shareholders of the British Oxygen Co. Ltd., stated Mr. J. S. Hutchison, chairman, at the annual meeting last week.

### Chemidus Plastics

H. J. Enthoven and Sons Ltd. have sold 49% of the issued capital of their subsidiary, Chemidus Plastics Ltd., makers of rigid p.v.c. tubes, to N.V. Billiton Maatschappij to help meet Chemidus capital needs. Billiton acquired a shareholding in Enthoven about six months ago. Chemidus now find it necessary to expand capacity and to provide additional working capital.

### Glaxo—Evans Medical

Offer of Glaxo Laboratories Ltd. to acquire the preference and ordinary capital of Evans Medical Ltd. is now unconditional, having been accepted by stockholders holding over 90% of each class. The Stock Exchange has granted permission to deal in the new Glaxo preference and ordinary stock. The offer remains open for acceptance until further notice. Glaxo stock certificates will be posted not later than 1 March to preference and ordinary stockholders of Evans Medical in respect of valid acceptances.

### Steetley Co.

Group profits of the Steetley Co. Ltd. for 1960 totalled £3,135,664 (£2,609,897). Net balance was £1,498,881 (£1,306,885), of which £1,472,195 (£1,282,117) is attributable to the parent company. A final dividend of 11% makes 16% (14%).

### Allied Chemical

Allied Chemical Corporation, New York, report a 1960 turnover of \$766 million (\$720 million). Net profit for the year stood at \$51,300,000 (\$50 million).

### American Cyanamid Co.

American Cyanamid Co. report for 1960 total turnover of \$578,390,000 (\$583,575,000) and a net profit representing \$2.20 (\$2.46) a share.

### Australian Lube Oil

Australian Lubricating Oil Refinery Ltd. has been registered with a nominal capital of £10 million. The company will build Australia's first lube-oil refinery at Kurnell at an estimated cost of between

- British Oxygen's One-for-two Scrip Issue
- Glaxo Offer for Evans Now Unconditional
- Sale of Fertilizers and Chemicals Shares
- Hoechst Turnover Up by DM460 Million

£11-£13 million. The new capital will be owned by Caltex Oil (Aus.) Pty. (50%), Ampol Petroleum (25%) and H. C. Sleigh Ltd. (25%).

### Chemical Fund

The Chemical Fund Inc., U.S., state that by the end of 1960 their total holdings amounted to \$268,500,000 (\$267,200,000). Of this sum some 4% (1%) was invested in European chemical companies including Koninklijke Olie, Unilever, Farbenfabriken Bayer, B.A.S.F., Saint-Gobain, Montecatini and in other chemical concerns.

### Fertilizers and Chemicals

Sale to private investors of most of the shares of Fertilizers and Chemicals has been approved by the Israeli Government. U.S. investors are expected to purchase more than 70% of the equity capital at par, the remainder to be held by the Government and the co-operative agricultural sector. The Government will still control the prices of fertilisers produced by the company, but will allow investors a net annual profit of 7% on their investment.

### Hercules Powder Co.

The Hercules Powder Co., U.S., recorded a net profit of \$27,160,000 (\$23,390,000) or \$3.05 (\$2.73) a share, over 1960. Turnover for the year was \$336,900,000 (\$283,600,000) and tax took \$28 million (\$25,600,000).

### Ricerca Chimica

The U.S. chemical-pharmaceutical concern Chas. Pfizer and Co. Inc. have purchased through their subsidiary Pfizer Corporation one-third of the shares of the Italian chemical company Laboratori Italiani di Ricerca Chimica S.p.A.

### Farbwerke Hoechst AG

Farbwerke Hoechst AG state in a letter to shareholders that over 1960 the company recorded a turnover of some DM2,680 m., compared with a figure for the previous year of DM2,220 m. Of the 1960 turnover some DM886 m. came from export sales, half of these exports being to other European countries; exports to E.F.T.A. countries brought in some DM210 m., those to countries of the European Economic Community only DM140 m. Apart from the turnover mentioned above are sums of DM280 m. recorded for the year by the 50% German subsidiary Wacker-Chemie GmbH and DM270 m. reached by foreign Hoechst subsidiaries owned to 50% or more.

Investments of Farbwerke Hoechst over 1960 amounted to DM417 m. (1959: DM254 m.). Prices were down by 1.8% on 1959 levels. The company has increased its capital by a further DM63 m. to a new level of DM693 m.

### U.S. Borax and Chemical

The United States Borax and Chemical Corporation, in whom Borax (Holding) Ltd. have a 75% interest, expect earnings in the year ending 30 September next to increase from the 1960 net of \$6,920,209, or \$1.50 a share. Any increase in earnings will not show up until the second half of calendar 1961.

### INCREASES OF CAPITAL

F. KENDALL AND SON LTD., manufacturing chemists, brewers' chemists, etc., Brewery Street, Stratford on Avon, Warwicks. Increased by £50,000 beyond the registered capital of £100,000.

W. E. TETLEY LTD., chemical manufacturers, etc., 49 Hustlergate, Bradford. Increased by £2,000 beyond the registered capital of £7,500.

WITCO CHEMICAL CO. LTD., Bush House, Aldwych, W.C.2. Increased by £140,000 beyond the registered capital of £160,000.

### NEW COMPANIES

DUSTALL AND GENERAL PRODUCTS LTD. Cap. £100. Manufacturers of and dealers in disinfectants, insecticides and germicidal cleaners and sweeping compounds, etc. Directors: T. E. Thorpe, M. A. A. Hugon, E. W. Alfandary. Reg. office: 38 Woodstock Road, London W.12.

ROLAND C. HEATH LTD. Capital £100 in £1 shares. To acquire the business of manufacturers, merchants and distributors of veterinary and agricultural chemicals and of equipment and machinery requisites therefor carried on by R. C. Heath and J. Sanker at 13 Redcliffe Square, S.W.10, as "Helman Chemicals", etc. Directors: R. C. Heath, Edna H. Caswell.

INDUSTRIAL (CHEMICAL SERVICES) LTD. Cap. £100. Scientific research laboratories, etc. Directors: H. G. F. Greenham, Josephine Greenham and V. E. J. Gellert. Reg. office: 41/42 Dover Street, London W.1.

NORBROCK CHEMICALS LTD. Cap. £100. Manufacturers of and dealers in chemicals, fine chemicals, synthetic chemicals, by-products, drugs, etc. Directors: N. G. Brock and E. K. Brock. Reg. office: 42 Hanway Street, London W.1.

### RELEASE OF RECEIVER

LANDORE CHEMICAL CO. LTD., Millbrook Works, Landore, Glam. R. W. Perrott, 6 Groll Park Road, Neath, has ceased to act as receiver and/or manager.



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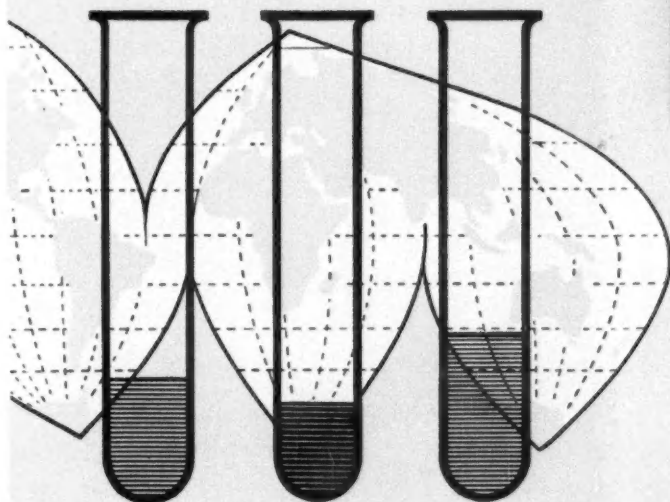
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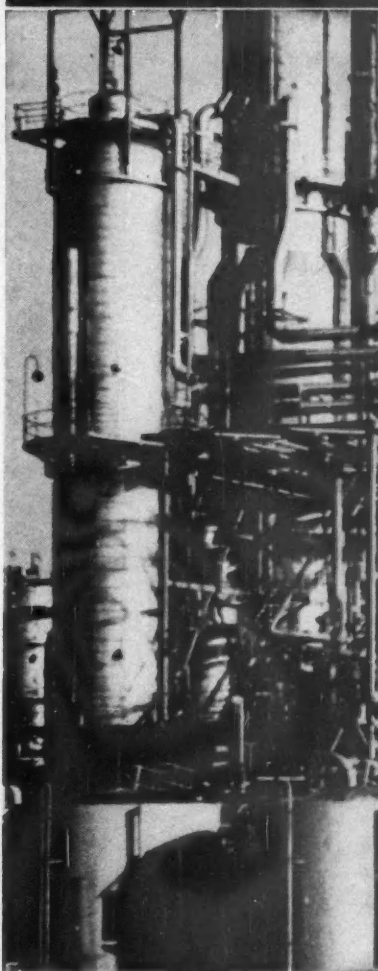
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## TRADE NOTES

### Mitchell Acid Pumps

Arrangements have now been made by L. A. Mitchell Ltd., 37 Peter Street, Manchester 2, for their range of chemical stoneware acid pumps to be manufactured by Mitchell Craig Pumps Ltd. (previously known as Craig Pumps Ltd.) of Glasgow. In addition to the existing range of Mitchell pumps, new and improved designs are now being developed which will be known as Mitchell Craig pumps. All sales of these pumps will be handled by L. A. Mitchell Ltd., 37 Peter Street, Manchester 2.

### U.K. Delrin Price

U.K. price of Delrin acetal resin is to be cut from 7 March by the Du Pont Co. (United Kingdom) Ltd., by 20% from 6s 5d a lb. to 5s 2d a lb. for natural resin (see also CHEMICAL AGE, last week, pp. 283 and 298). At the new price on raw material cost alone, Delrin is almost exactly equal to zinc die-casting alloy on a price/volume basis and one half the cost of brass. Where cost of finished components is considered, the facility of production by injection moulding of precision parts, requiring little or no finishing operations, can swing cost considerations heavily in favour of the new material.

### Delayed-action Accelerator

Robinson Brothers Ltd., Ryders Green, West Bromwich, have issued a new data sheet on Robac PTM (dipentamethylene thiuram monosulphide), the true delayed-action accelerator. The advantage of Robac PTM is that it allows time for the most intricate moulds to be filled and then gives extremely fast cures in

natural rubber. This property is also exhibited in styrene-butadiene synthetic rubber. The data sheet includes figures for SBR, which are new.

### Change of Address

From 27 February the new London office address of Whessoe Ltd. will be 40 Broadway, S.W.1 (Whitehall 6034).

### Anti-corrosive Pigments

According to a report on work at the Battelle Memorial Institute, calcium and zinc molybdates have shown interesting corrosion inhibiting properties when compared with red lead. Copies of the report are available from Climax Molybdenum Co. of Europe Ltd., 2 Cavendish Place, London W.1.

### Esso Chemicals for Industry

A booklet, describing briefly the more important products handled by the Chemicals Division of Esso Petroleum Co. Ltd., 50 Stratton Street, London W.1, has been published. Notes on properties and applications of olefins, alcohols, heavy aromatics, polymers, solvents and waxes are included.

### Croda Digest

A new literature digest, Vol. 2, No. 4, 1960, has been devised for the users of Croda products to give them up-to-date information taken from all available sources on the latest uses of the products manufactured by Croda Ltd., Cowick Hall, Snaith, Goole, Yorkshire. The digest is produced by the General Chemicals Division at irregular intervals. Included in this edition are references to adhesives, lubricants, plastics, pharmaceuticals, detergents and rubber.

## Market Reports

### EXPANDING DEMAND FOR FERTILISERS

**LONDON** There has been little of fresh interest to record in the market for industrial chemicals, and the undertone generally is steady. So far as the chief consuming industries are concerned the movement against contracts has been satisfactory while a fair amount of new business has been reported for spot or nearby requirements. Zinc oxide prices have been raised by 50s a ton as from 18 February, white seal now being quoted at £102 10s, green seal £100 10s and red seal £97 10s a ton for 1-ton lots.

A more active market has been in evidence for chemical fertilisers and a steady expansion in demand can be expected during the coming weeks.

Among the coal tar products supplies of the naphthalenes continue to find a ready outlet, and a steady demand persists for cresylic acid and creosote oil.

**MANCHESTER** Quotations have been well maintained in virtually all sections of the Manchester chemical market. Bleaching materials and other textile

chemicals are moving into consumption in fairly good quantities against contracts and there is a steady demand for plastics materials, solvents and most other industrial chemicals. A moderate weight of fresh business, mainly for prompt or near delivery, has been done. Shipments overseas are going forward reasonably well. Seasonal activity in fertilisers is now well under way, with more interest shown in superphosphates and the compounds.

**SCOTLAND** Business during the past week has continued along steady lines, and home trade movements in most sections of industry have been brisk with again varied demands. Deliveries against contract requirements have also been fairly active with the offtake quantities at a good level. There has been little change in prices which mostly remain firm. There is still considerable interest in the export market with a good volume of enquiries and resultant business being received.



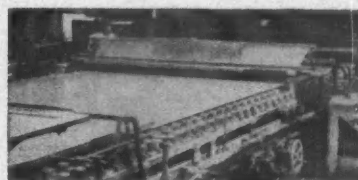
Chemical research, represented by the crystal, is the key that unlocks many of the world's mysteries. The eggs? Nature's "perfect package" symbolizes Dow leadership in packaging plastics. The many-ringed tree cross-section stands for the once-precarious occupation of agriculture, today becoming a predictable science through the increasing use of farm chemicals.



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# NEW PATENTS

By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

## AMENDED SPECIFICATIONS

On Sale 31 March

Oils containing copolymers. Esso Research & Engineering Co. 868 665

## ACCEPTANCES

Open to public inspection 6 April

Solid rocket fuel and method of manufacture. General Tire & Rubber Co. 864 749  
Heat-exchangers. Woods, M. G. 864 750  
Luminescent materials. Associated Electrical Industries Ltd. 864 343  
Production of deuterium-enriched compounds. United Kingdom Atomic Energy Authority. 864 768  
Electric cells of the hydrogen-oxygen type. E.R.A. Patents Ltd. 864 456  
Hydrogen-oxygen cells particularly for use as electrolyzers. E.R.A. Patents Ltd. 864 457  
Compounding of synthetic resins and rubbers. Semtex Ltd. [Addition to 727 393 and 861 968.] 864 386  
Production of foamed plasticised resins. Dunlop Rubber Co. Ltd. 864 770  
Method of the stability to light of artificial resins containing ketone groups. Howards of Ilford Ltd. 864 541  
Process for the manufacture of modified cyclohexanone resins. Howards of Ilford Ltd. 864 542  
4,5-Epoxy-3-keto steroid compounds and the preparation thereof. Soc. Farmaceutici Italia. 864 607  
4-Substituted steroids. Soc. Farmaceutici Italia. 864 608  
Process for the production of alkali metal and alkaline earth metal borohydrides. Studiengesellschaft Kohle. 864 616  
Steroids and the production thereof. Olin Mathieson Chemical Corp. 864 346  
Preparation of 4-chloro-3-keto- $\Delta^4$ -steroids. Soc. Farmaceutici Italia. 864 609  
Heat-hardenable compositions containing epoxy compounds. Union Carbide Corp. 864 350  
Process for the production of carboxylic acids. Montecatini Soc. Generale Per L'Industria Mineraria e Chimica. 864 351  
Manufacture of steroid dehydrogenation products. Ciba Ltd. 864 414  
Process for the manufacture of polyethylenes. Farbwerke Hoechst AG. 864 772  
Polymerisation catalyst and process for polymerising olefins with said catalyst. Montecatini Soc. Generale Per L'Industria Mineraria e Chimica. 864 352  
Process for the chlorination of polyethylene. Ruhrchemie AG. 864 774  
Production of cyclohexanone. Monsanto Chemical Co. 864 353  
Polyamines. Onyx Oil & Chemical Co. 864 791  
Steroids and the manufacture thereof. Upjohn Co. 864 360, 864 381  
Process for the production of seasoning materials containing glutamic acid or a derivative thereof as the main constituent. Ajinomoto Kabushiki Kaisha, and Sanzoku Shuzo Kabushiki Kaisha. 864 562  
Heterocyclic compounds and the manufacture thereof. Upjohn Co. 864 356  
Rapidly hardenable mixtures of epoxy resins and polyamide resins. Ciba Ltd. 864 357  
Ethylphenyl acetylurea. Laboratoires Sapon S.A. 864 536  
Therapeutic compositions and their manufacture thereof. Upjohn Co. 864 710

Method of bonding fluorine-containing plastics. Farbwerke Hoechst AG. 864 537  
Production of metallic halides. British Titan Products Co. Ltd. 864 538  
Addition polymerisation processes. B.X. Plastics Ltd. 864 675  
Process for manufacturing hydrogen peroxide. Columbia-Southern Chemical Corp. 864 676  
Heterocyclic phosphorus-containing compounds and their production. Union Carbide Corp. 864 797  
Pyrizolo [3,4-d] v-triazine derivatives. Ciba Ltd. 864 678  
Preparation of carboxyalkyl polysiloxanes. General Electric Co. 864 681  
Expanded silicone rubber and method of making. Connecticut Hard Rubber Co. 864 566  
Process for the preparation of polymeric materials of the polyamide type. California Research Corp. 864 839  
Bleaching processes and compositions. Unilever Ltd. [Addition to 836 988.] 864 798  
Copolymers, and their manufacture and use. Ciba Ltd. 864 311  
Boron esters. United States Borax & Chemical Corp. 864 840  
Pharmaceutical preparations for the prevention or relief of sunburn. Gale Bais & Co. Ltd. 864 313  
Process for manufacturing phenol and acetone from cumene hydro-peroxide. Soc. Italiana Resine. 864 486  
Process for producing synthetic anhydride. Theilacker, H., and Jackson, R. V. 864 843  
Synthetic bast of linear polymeric thermoplastic material. Soc. de la Viscose Suisse. 864 488  
Lubricant aerosol generator. Stewart-Warner Corp. 864 623  
Nuclear alkylation of aromatic compounds containing a hydroxyl group. Farbenfabriken Bayer AG. 864 696  
Polymeric organosilicon compositions. Imperial Chemical Industries Ltd. 864 697  
Thionophosphonic acid esters. Farbenfabriken Bayer AG. 864 632  
Benzimidazoles. Ciba Ltd. 864 698  
Antibiotic phylomycin. Farbenfabriken Bayer AG. 864 814  
Ethers containing epoxide groups. Ciba Ltd. 864 699  
Polyamide resins. Imperial Chemical Industries Ltd. 864 701  
Porous plastics and their production. Badische Anilin- & Soda-Fabrik AG. 864 815  
Steroids. Francesco Vismara S.p.A., and Ercoli, A. 864 704  
N-substituted-4-phenyl piperidines. Parke, Davis & Co. 864 658  
Zeolites. Union Carbide Corp. 864 707  
Pyrimidylhydrazines. Imperial Chemical Industries Ltd. 864 731  
Production of polymers and copolymers of acrylonitrile. Deutsche Akademie der Wissenschaften Zu Berlin. 864 468  
Process for the oxidation of bis(p-alkylphenoxy) alkanes to the corresponding carboxylic acids. Imperial Chemical Industries Ltd. 864 734  
Separation of organic compounds. British Petroleum Co. Ltd., Goldup, A., and Swanton, W. T. 864 661  
Treatment of films of crystallisable polymers. Du Pont de Nemours & Co., E. I. 864 471  
Heterocyclic compounds. May & Baker Ltd. 864 820  
Pharmaceutical substance for the treatment of carcinoma, tumours and the like and process for making same. Doyle, J. D. F., and Doyle, M. C. F. 864 740  
Method of and apparatus for carbonating liquids. Bratby & Hinchcliffe Ltd. 864 950  
Alkylene diboronic acids. Imperial Chemical Industries Ltd. 864 473  
6-Methyl steroids. British Drug Houses Ltd. 864 762  
Process for preparing aromatic diamines. Good-year Tire & Rubber Co. 864 763  
Thiophosphoric acid esters. Farbenfabriken Bayer AG. 864 433  
Purification of dehydroacetic acid. Distillers Co. Ltd. 864 551  
Heterocyclic salts. Imperial Chemical Industries Ltd. 864 786  
Process for the production of lead tetraalkyls. Ziegler, K. 864 393  
Process for separating lead tetraalkyls from aluminium alkyls. Ziegler, K. [Addition to 864 393.] 864 394

Production of unsaturated aliphatic aldehydes. Distillers Co. Ltd. 864 666  
Process for neutralising acid-hardened foamed phenolaldehyde resin materials. Dynamit Nobel AG. 864 445  
Production of cellulose ethers. Wolff & Co. Komm.-Ges. Auf Aktien. 864 766  
Benzodiazepine 4-oxides and a process for the manufacture thereof. Hoffmann-La Roche & Co. AG, F. 864 824  
Process for the manufacture of percarboxylic acids. Knapsack-Griesheim AG. 864 803  
Process for the production of high molecular weight polyethylene terephthalate. Vereinigte Glanzstoff-Fabriken AG. 864 717  
Epoxy resin adhesives. Grace & Co., W. R. 864 437  
Purification of bacitracin. Commercial Solvents Corp. 864 718  
Process for the preparation of organosiloxane esters. Midland Silicones Ltd. 864 438  
Process for the production of 3,5-dihydrocarbon substituted-4-hydroxy benzoic acids and their esters. Farbenfabriken Bayer AG. 864 720  
Diazoamino compounds. Farbenfabriken Bayer AG. 864 829  
Acid monoazo dyestuffs of the benzene-azo-naphthalene series. Sandoz Ltd. 864 742  
Salts of kanamycin with amino acids and N-acyl amino acids and a process for their production. Chemie Grünenthal GmbH. 864 831  
Production of alkali metal disulphites. Badische Anilin- & Soda-Fabrik AG. 864 833

## DIARY DATES

### MONDAY 27 FEBRUARY

C.S.—Swansea: Univ. Coll. Chem. Dept., 5 p.m. 'Recent work on the gallotannins', by Prof. R. D. Haworth.

### TUESDAY 28 FEBRUARY

C.S.—Durham: Univ. Chem. Labs., 5 p.m. 'Stereochemistry of metal ions', by Prof. L. E. Orgel.  
C.S. with S.C.I. & R.I.C.—Norton on Tees: Wm. Newton School, 8 p.m. 'Progress & its effects on our food supplies', by T. McLachlan.  
S.A.C.—London: Royal Coll. of Surgeons, Lincoln's Inn Fields, W.C.2, 6 p.m. Meeting: 'Physical methods of analysis used in medical research'.  
S.C.I.—London: 14 Belgrave Sq., S.W.1, 6 p.m. Meeting of Cathodic Protection Panel.

### WEDNESDAY 1 MARCH

Plastics Inst. & I.R.I.—London: Inst. Elec. Eng., Savoy Pl., W.C.2. One-day conference on 'Rubber & plastics in cables'.

### THURSDAY 2 MARCH

C.S.—Aberystwyth: Univ. Coll., Edward Davies Chem. Labs., 5 p.m. 'Polymer kinetics', by Dr. T. T. Jones.  
C.S. with S.C.I. & R.I.C.—Gloucester: Tech. Coll., 6.30 p.m. 'Titrations in non-aqueous solvents', by E. Minshall.  
S.C.I.—Birmingham: Imperial Hotel, 6.30 p.m. 'Chemistry, manufacture & uses of dimerized fatty acids', by L. F. Byrne.  
R.I.C.—Chatham: Medway Coll. of Tech., 7 p.m. 'Some recent developments in gas-liquid chromatography', by Dr. A. T. James.  
R.I.C.—London: West Ham Coll. of Tech., E.15, 6.30 p.m. 'Chemicals from acetylene', by Dr. S. A. Miller.  
S.C.I.—Bangor: Univ. Coll. Chem. Dept., 5.45 p.m. 'Some organic compounds of transition metals', by Prof. F. L. Pauson.  
S.C.I.—Bristol: Univ. Chem. Dept., 5.15 p.m. 'Oxidation in aqueous solution', by Prof. F. S. Dainton.  
S.C.I.—Nottingham: Gas Showrooms, 7.30 p.m. 'Cost accounting in the chemical industry', by A. J. Tattersfield.

### FRIDAY 3 MARCH

C.S.—Dublin: Trinity Coll. Chem. Dept., 7.45 p.m. 'Kinetics of some halogenation reactions' by R. B. Bell.  
Plastics Inst.—Manchester: Textile Inst., 6.45 p.m. 'Recent developments in the use of acetate resins', by Dr. G. F. C. Barrett.  
R.I.—London: 21 Albemarle St., W.1, 9 p.m. 'Development of X-ray analysis', by Sir Lawrence Bragg.  
S.A.C.—London: Burlington Hse., W.1, 2.15 p.m. Society a.g.m. followed by 'Enlargement of horizons in analytical chemistry', by R. C. Chirnside.  
S.C.I.—Glasgow: Royal Coll. of Sci. & Tech., 7 p.m. Glasgow Section a.g.m.



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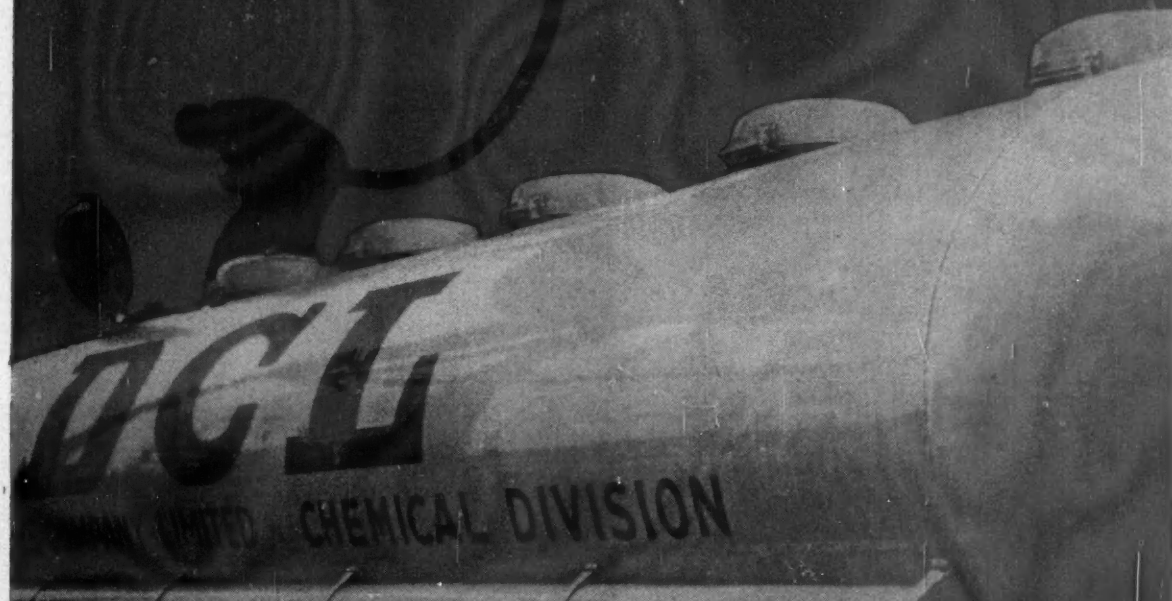
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Particulars of the proposed amendments were set forth in the Official Journal (Patents), No. 3,756, dated February 8, 1961.

Any person may give Notice of Opposition to the amendment by leaving Patents Form No. 36 at the Patents Office, 25 Southampton Buildings, London, W.C.2, on or before March 8, 1961.

**GORDON GRANT,**  
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The Proprietors of British Patent No. 761,712, for "SILICA-ALUMINA COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF", desire to enter into negotiations with a firm or firms for the sale of the patent or for the grant of licences thereunder. Further particulars may be obtained from Marks & Clerk, 57 & 58 Lincoln's Inn Fields, London, W.C.2.

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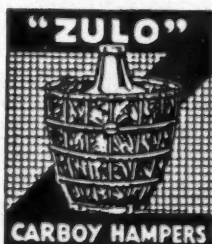
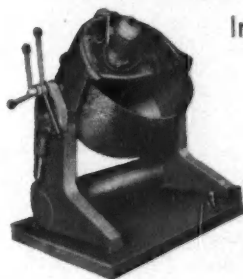
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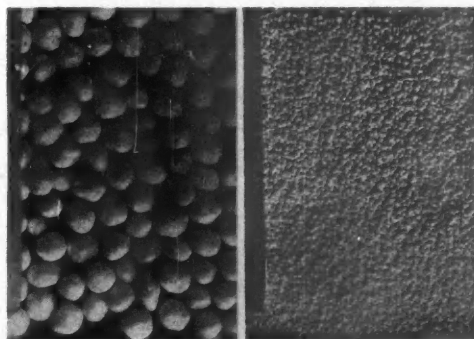
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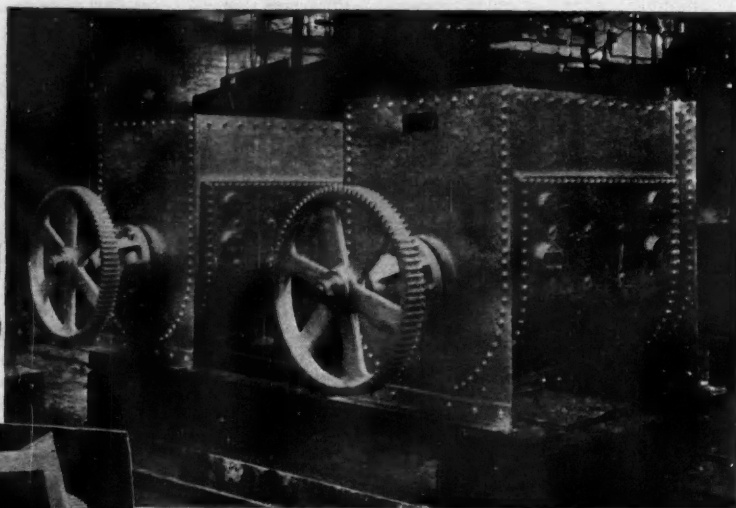
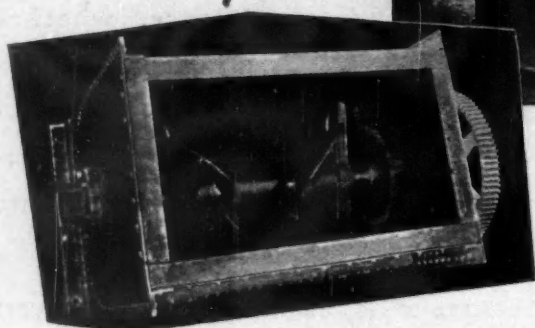
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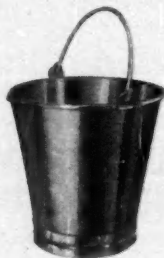


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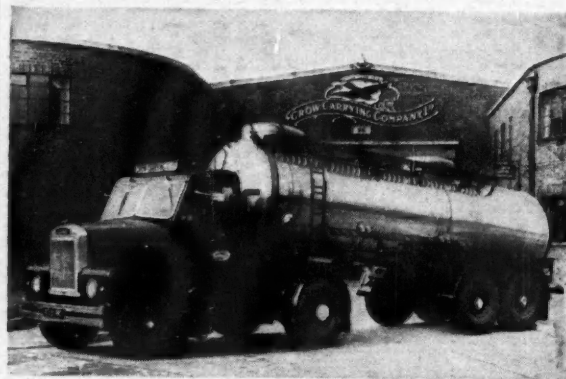
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